

FIGURE 1

FIGURE 1

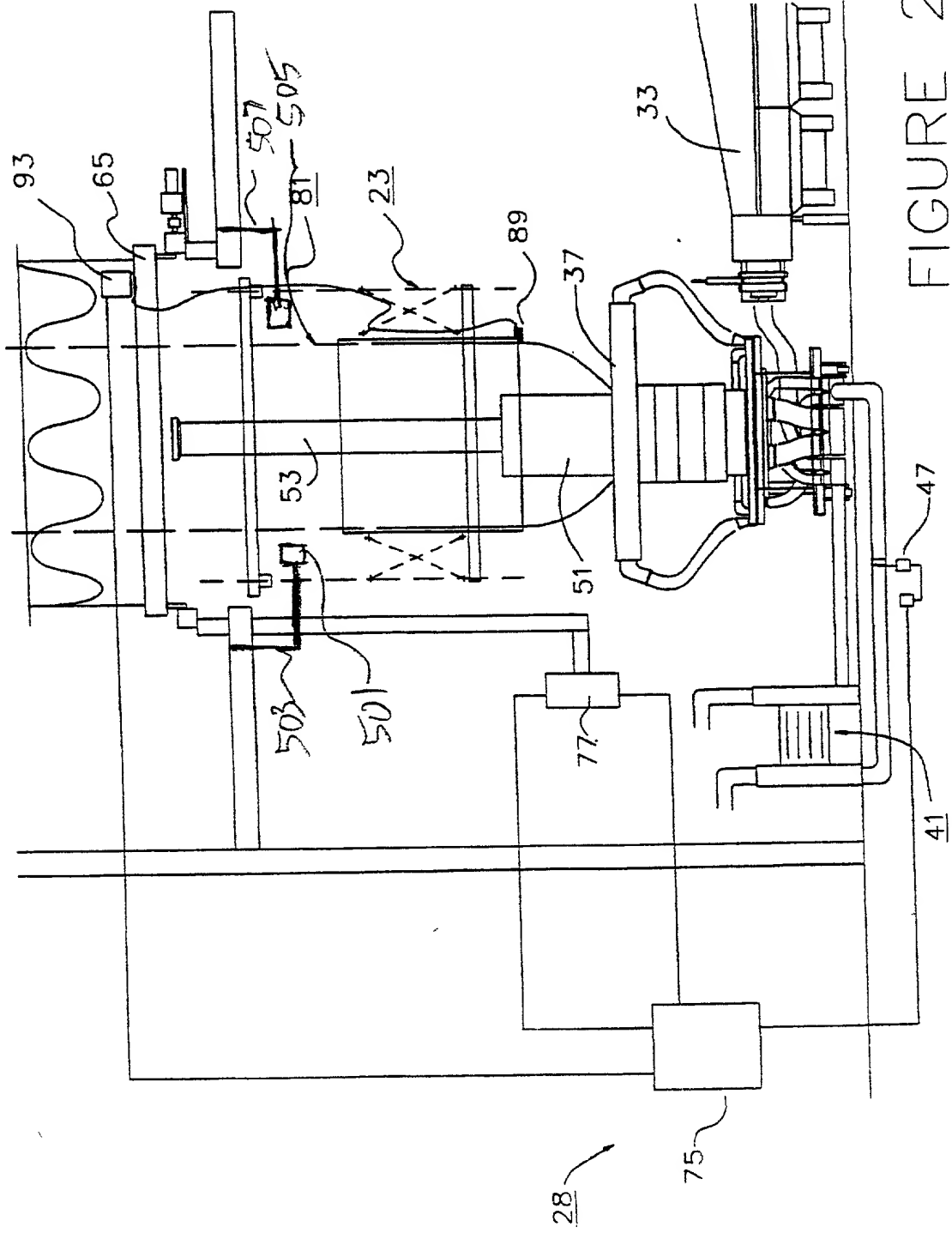


FIGURE 2

Patent 4,853,860

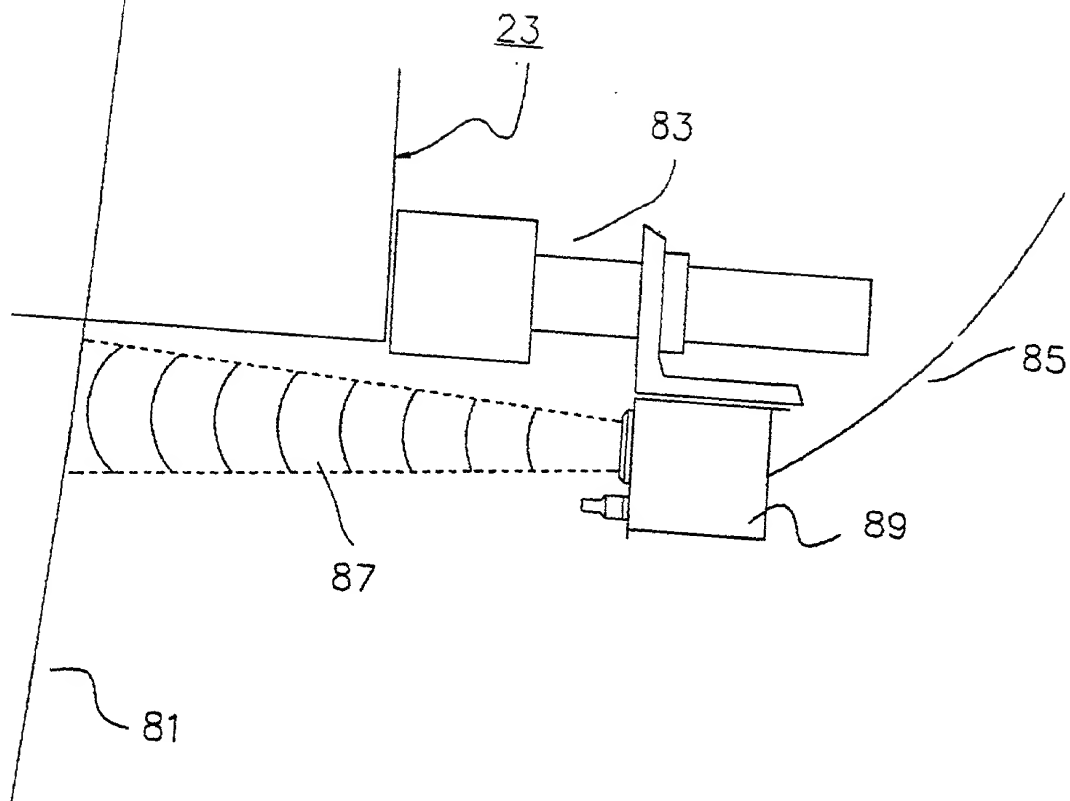


FIGURE 3

FIG. 4

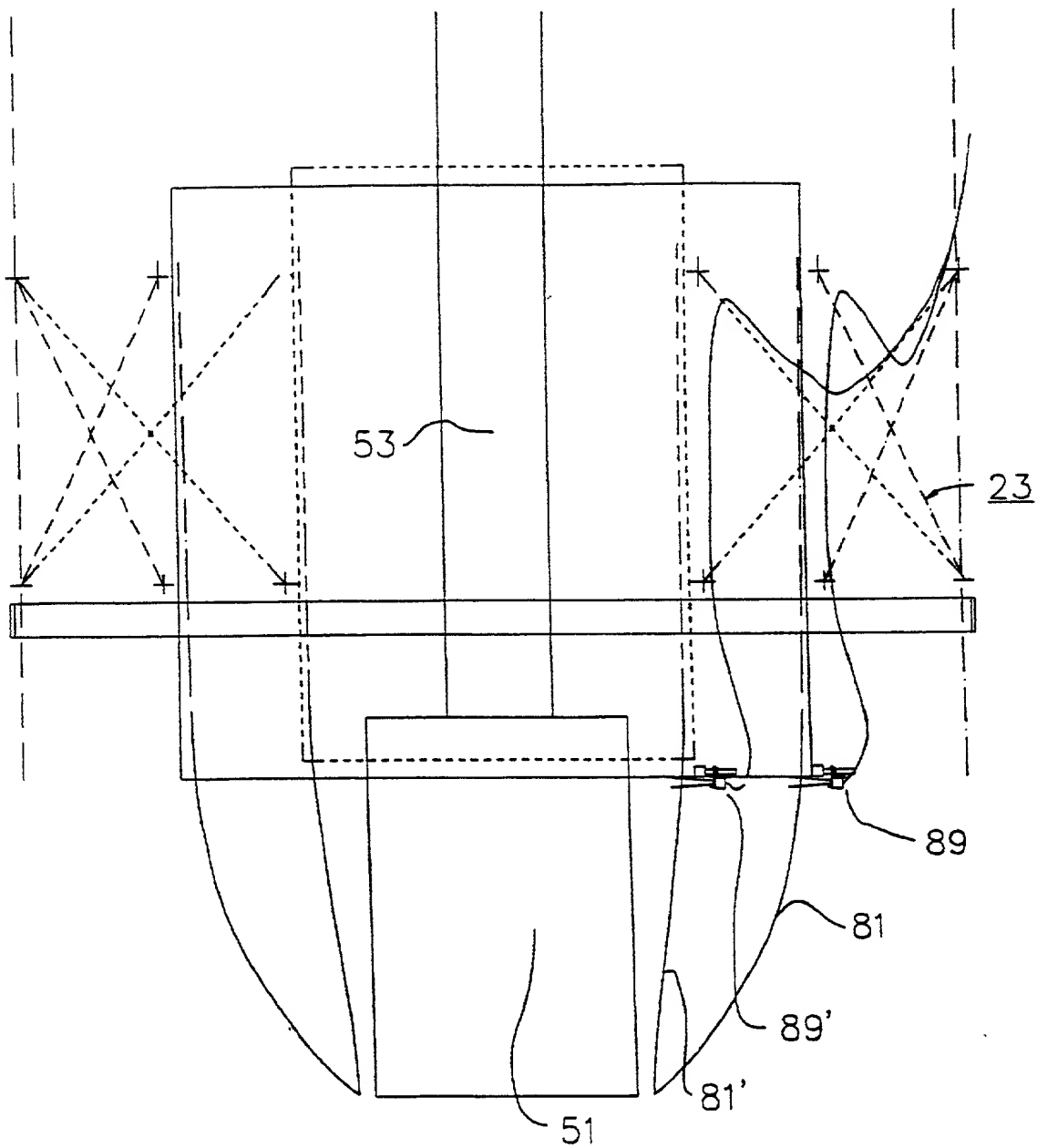


FIGURE 4

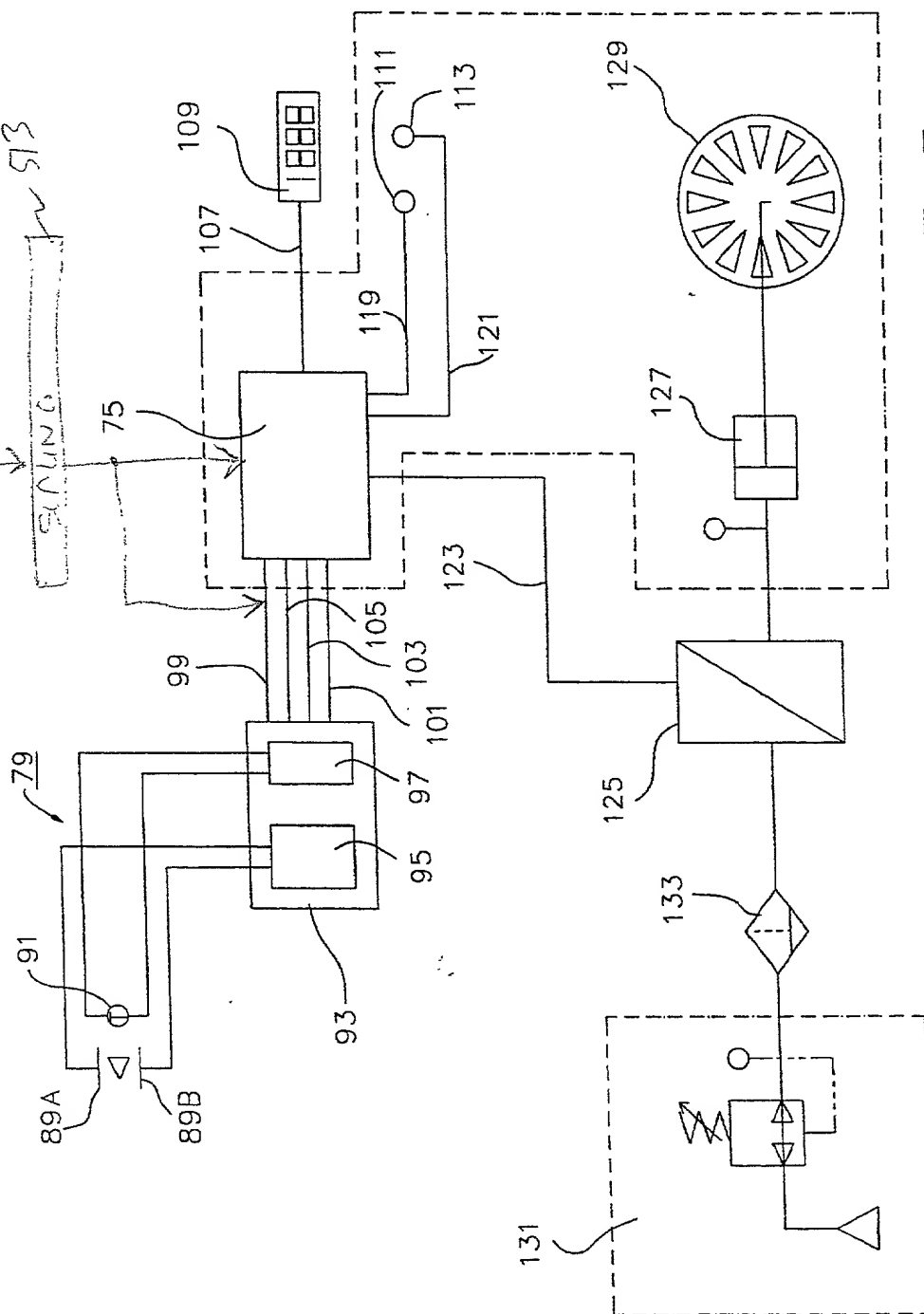
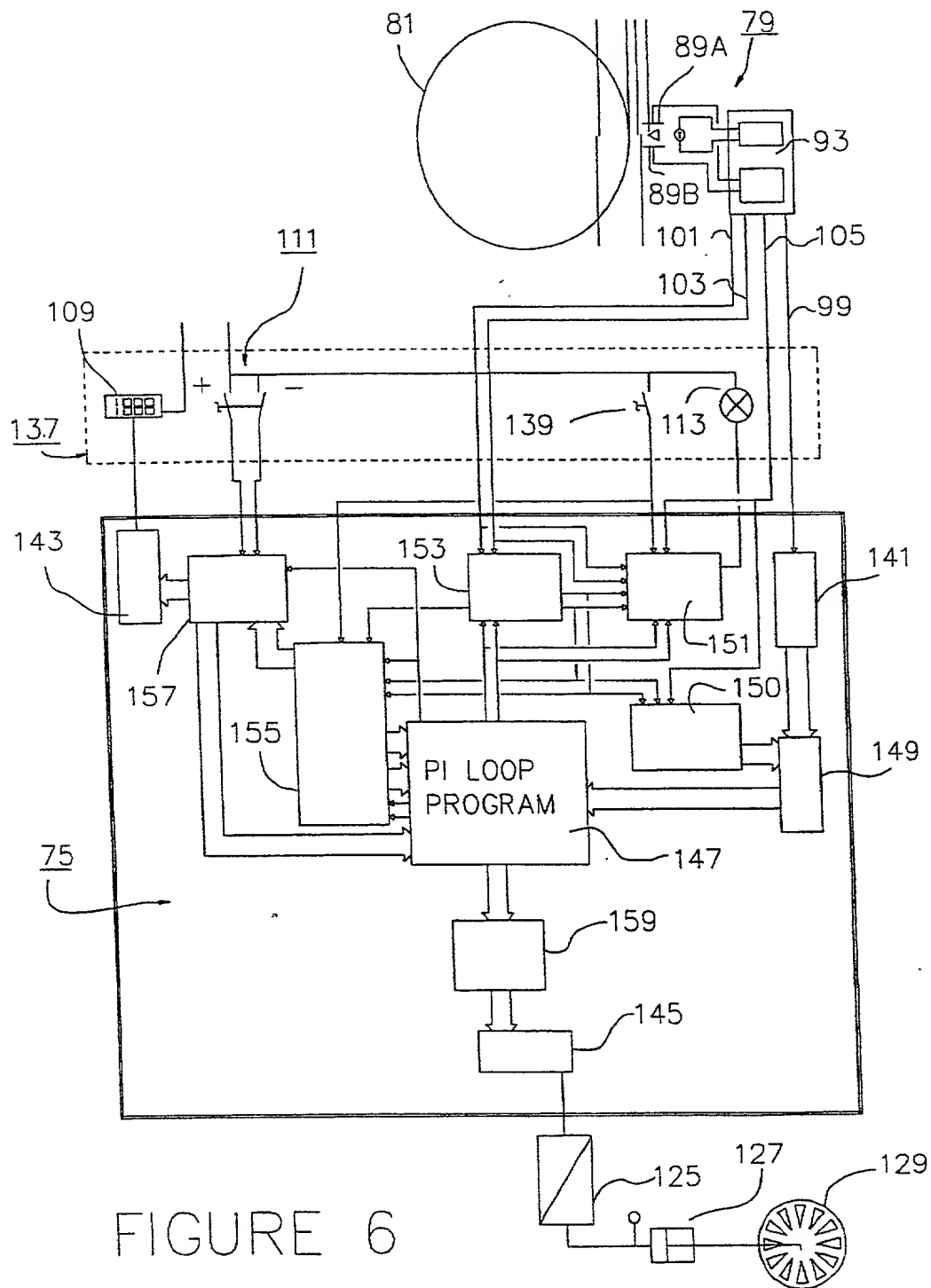
[illegible]

FIGURE 5



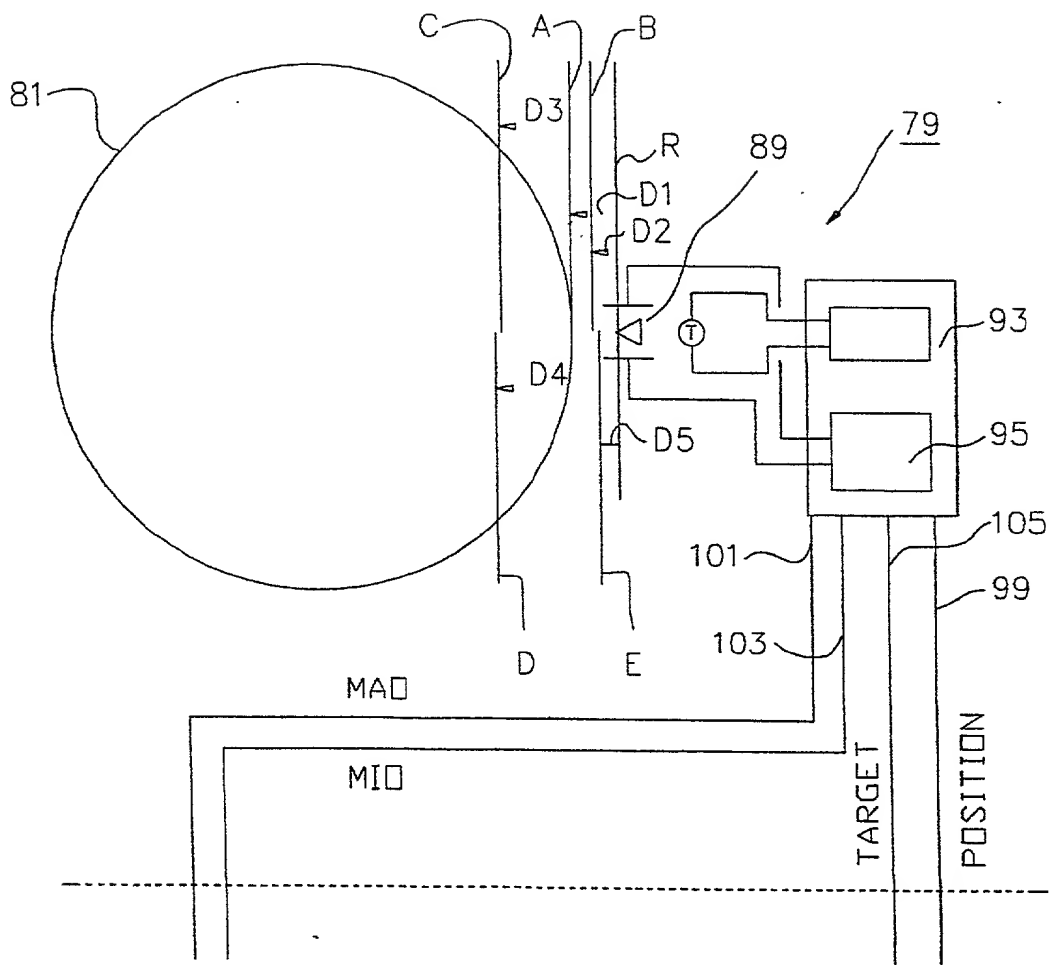


FIGURE 7A

FIG. 7B

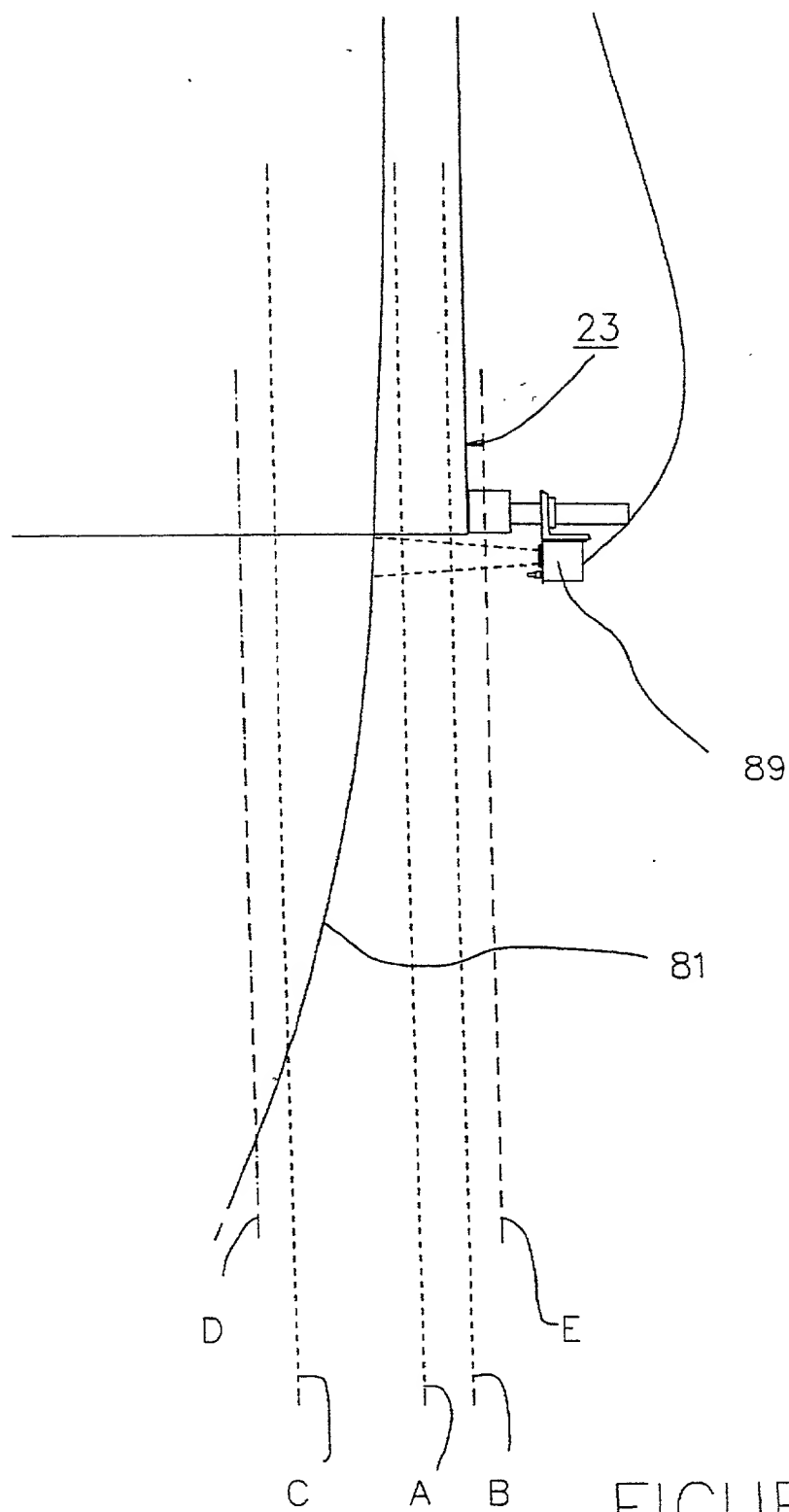


FIGURE 7B



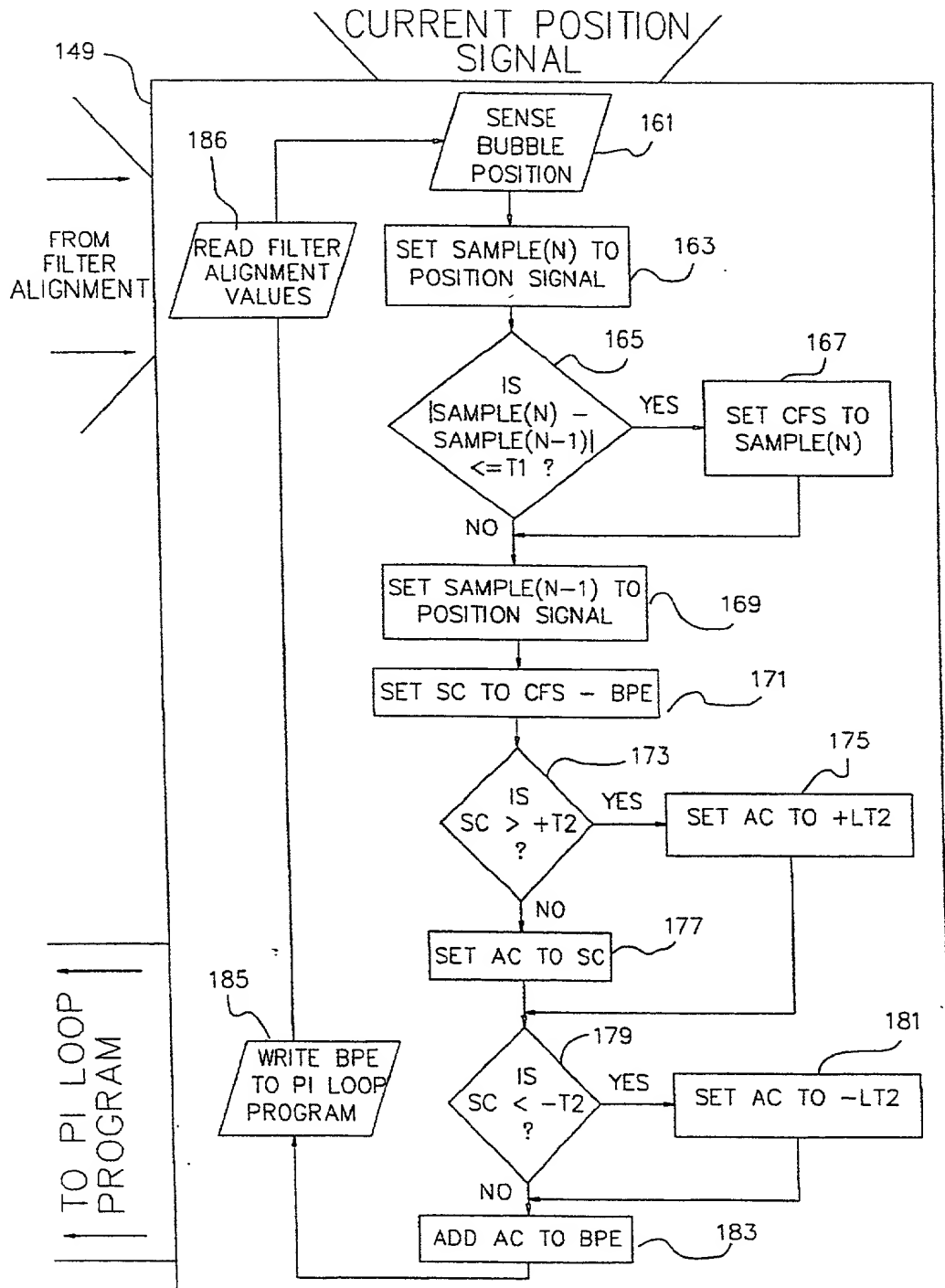
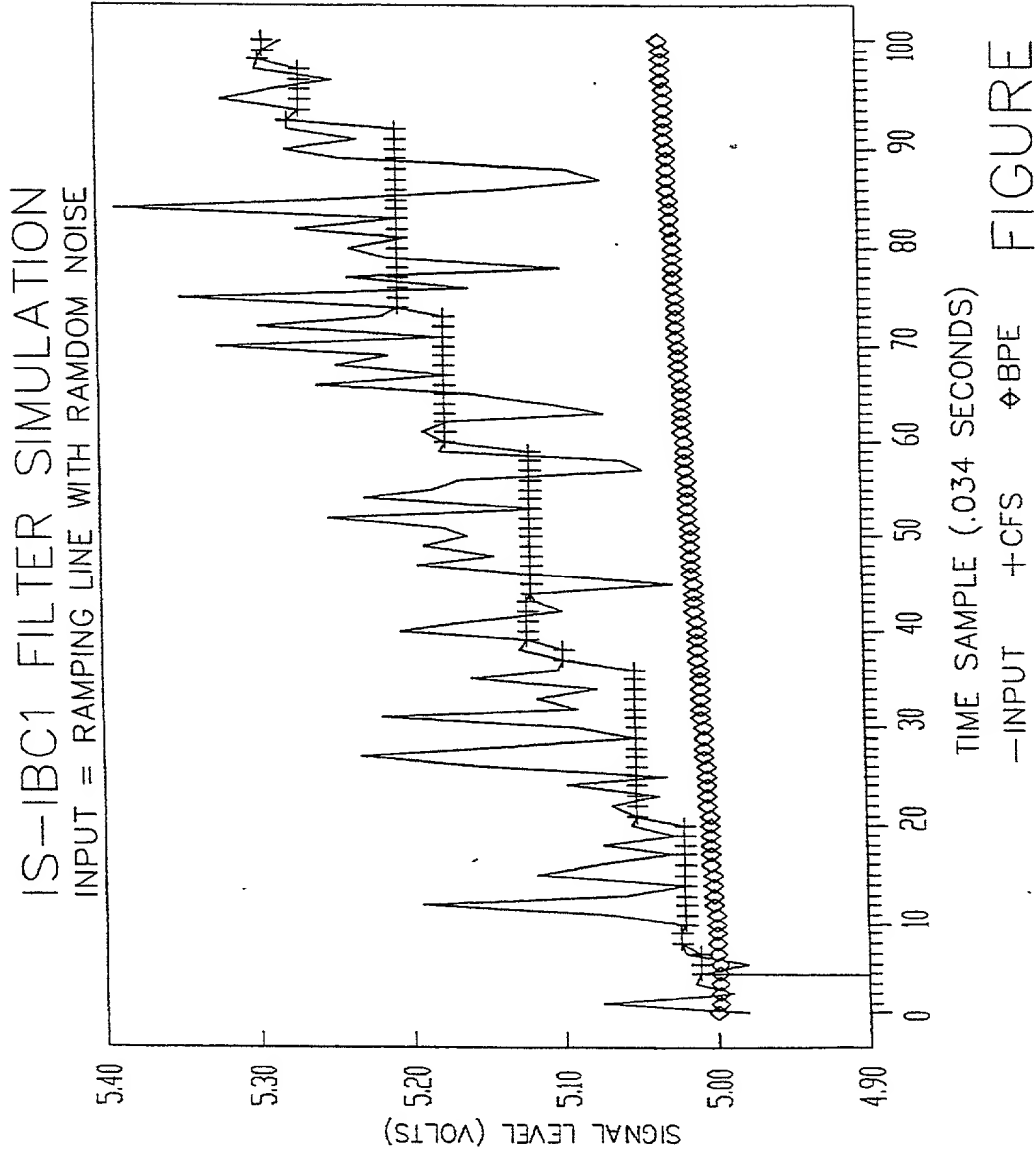


FIGURE 8A



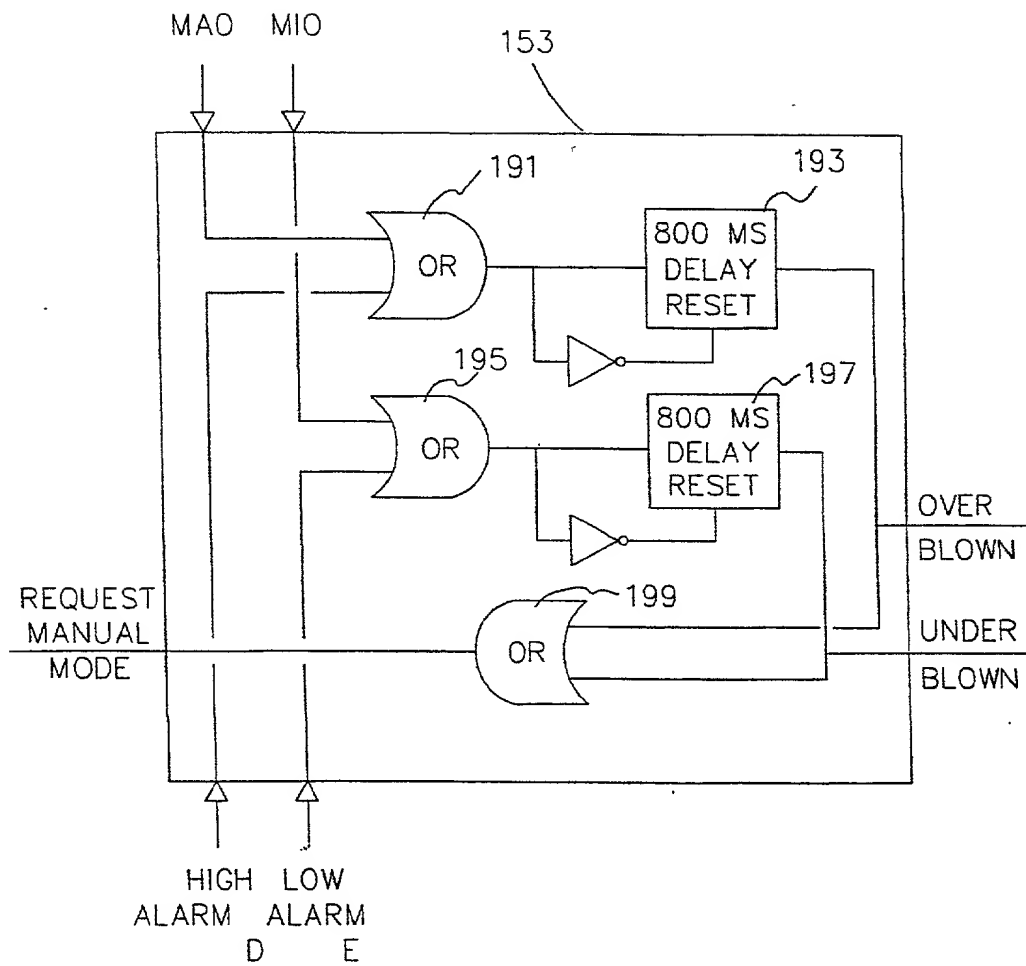


FIGURE 9

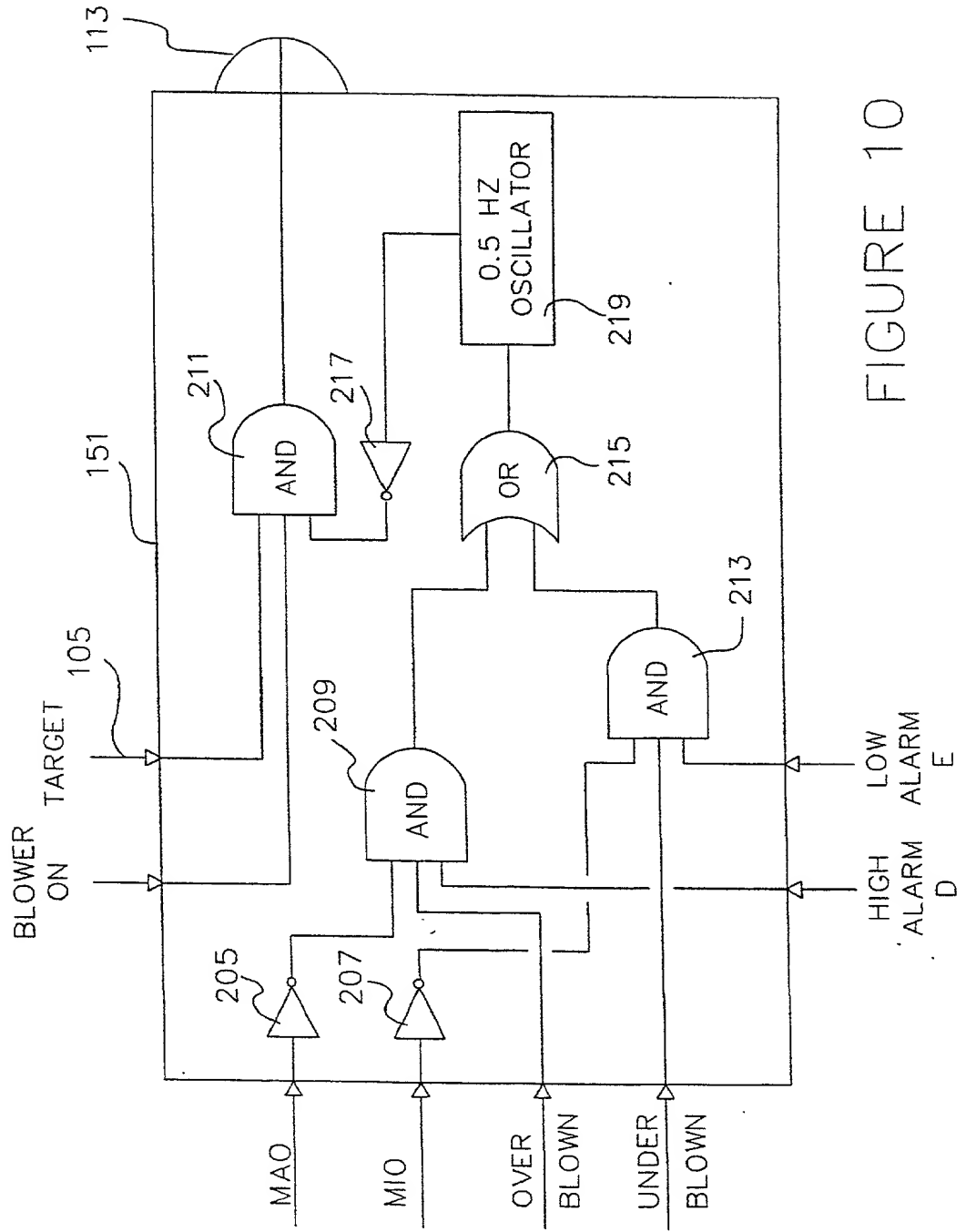


FIGURE 10

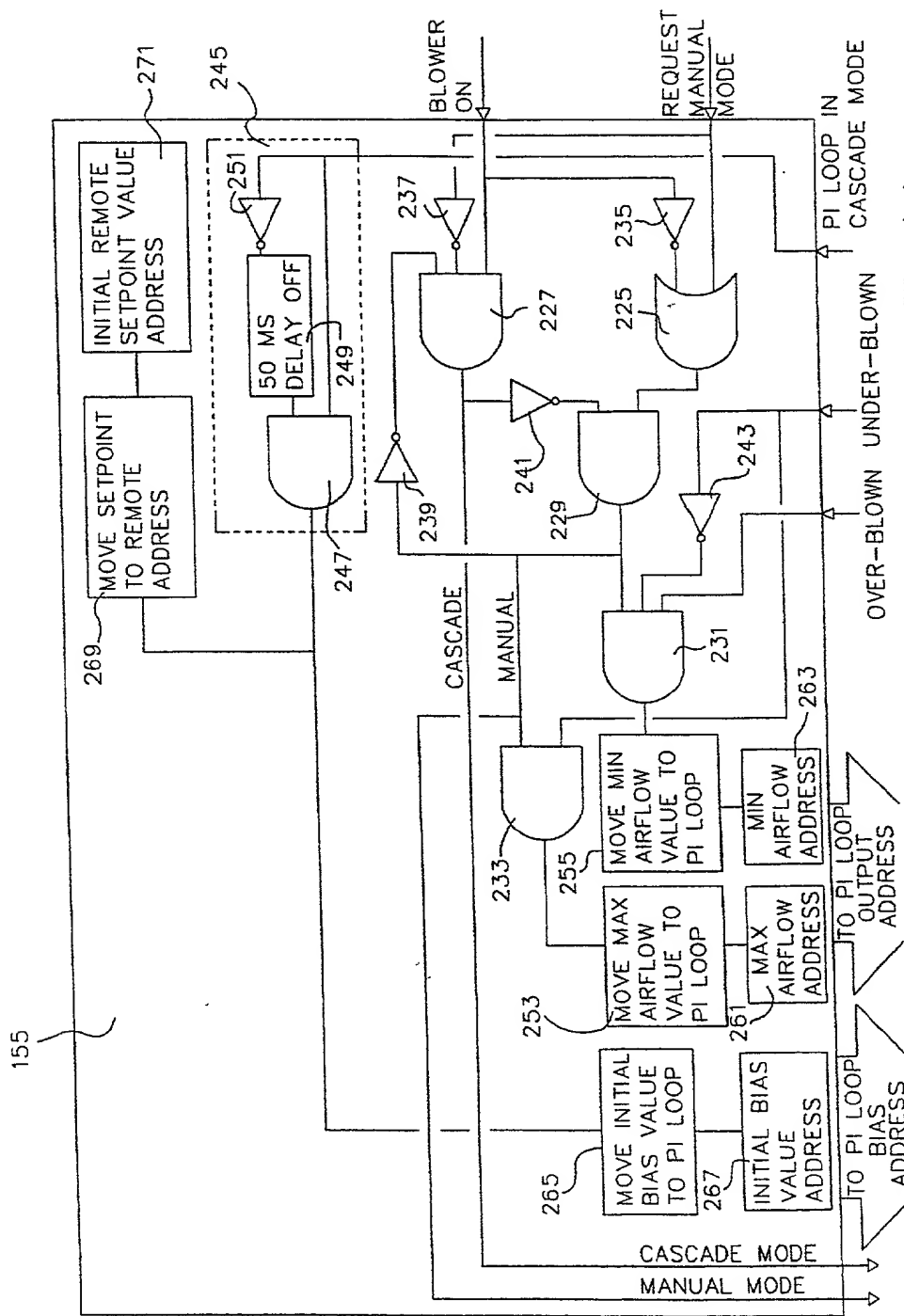


FIGURE 11

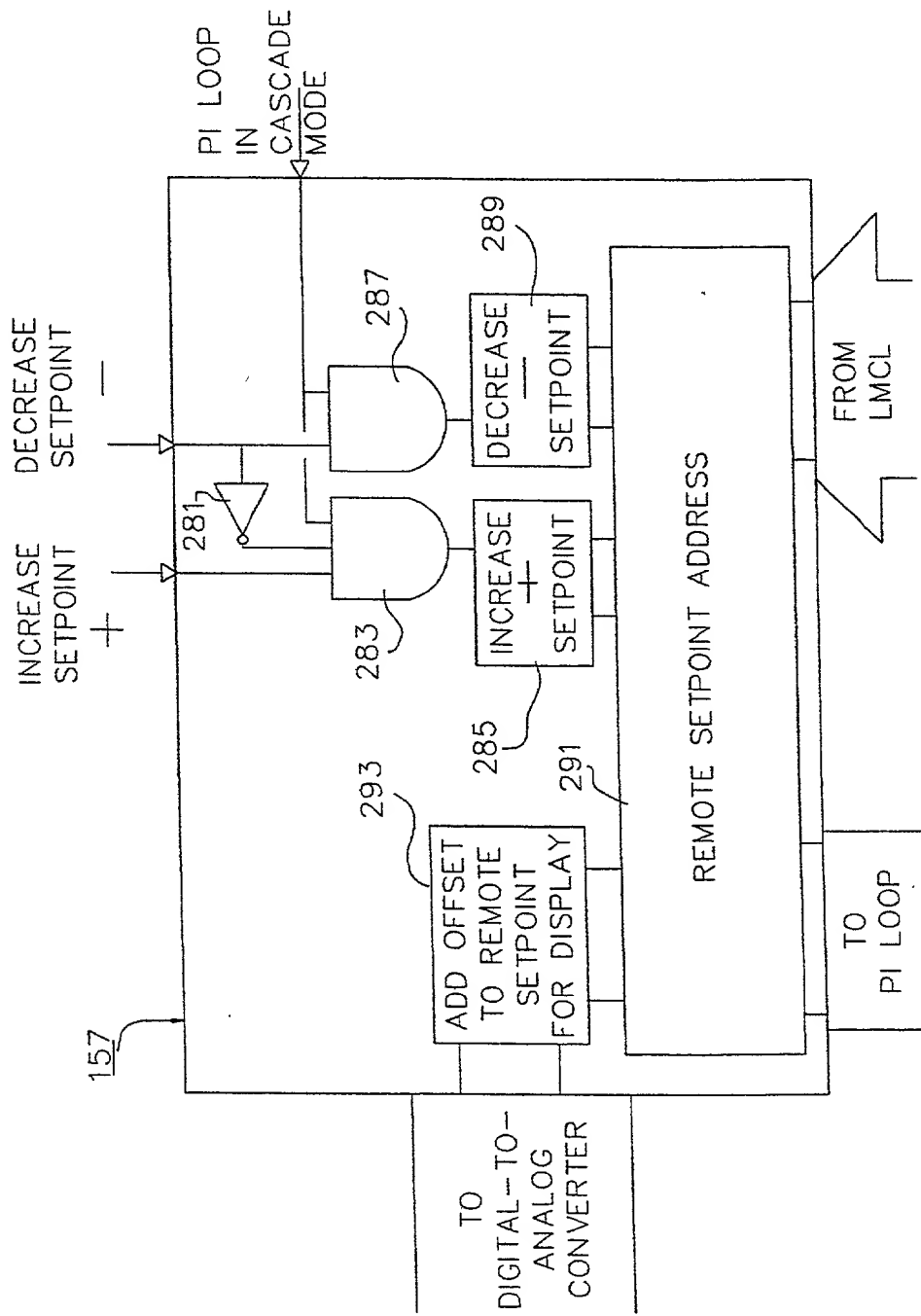


FIGURE 12

FIG. 13

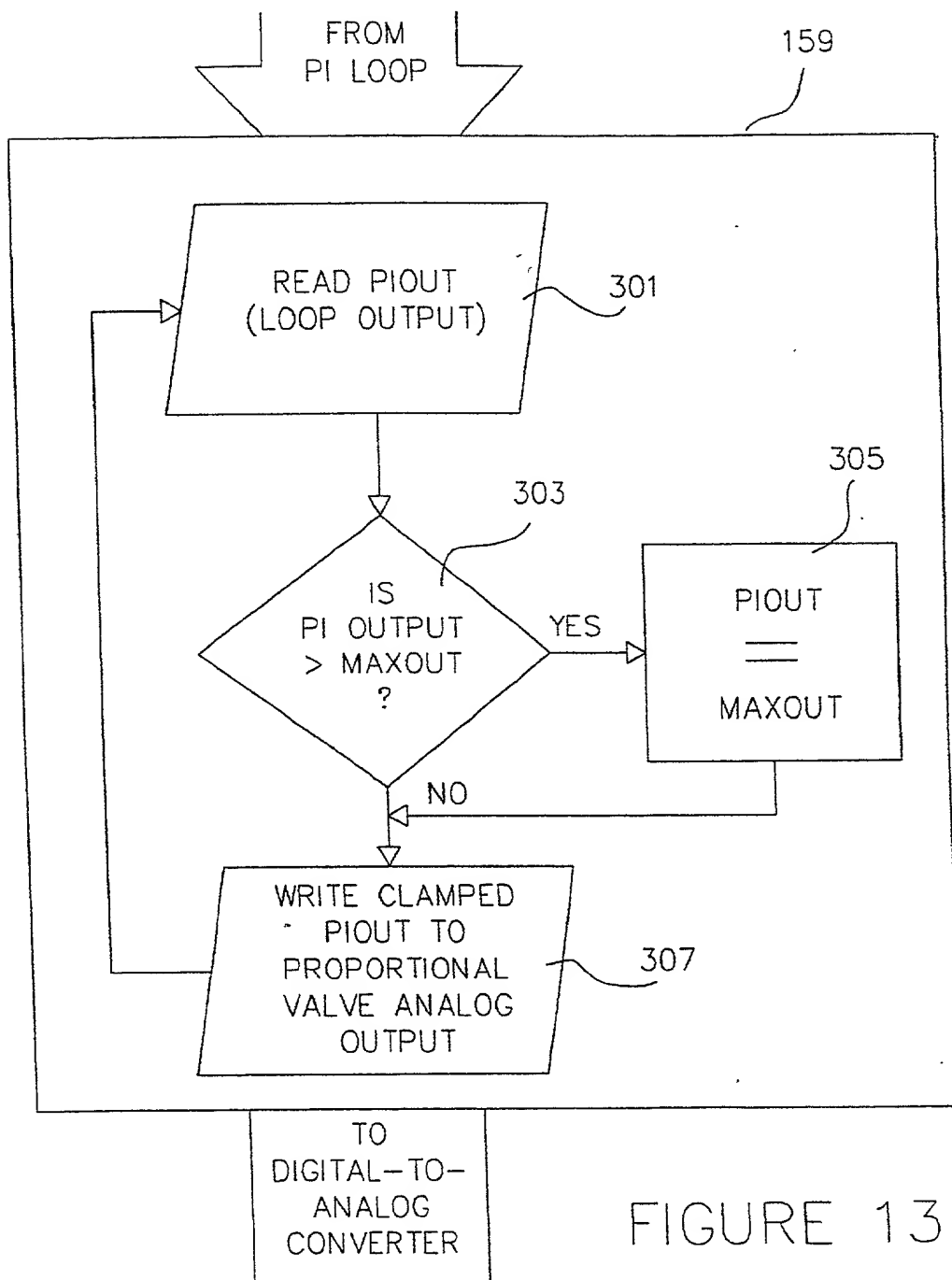


FIGURE 13

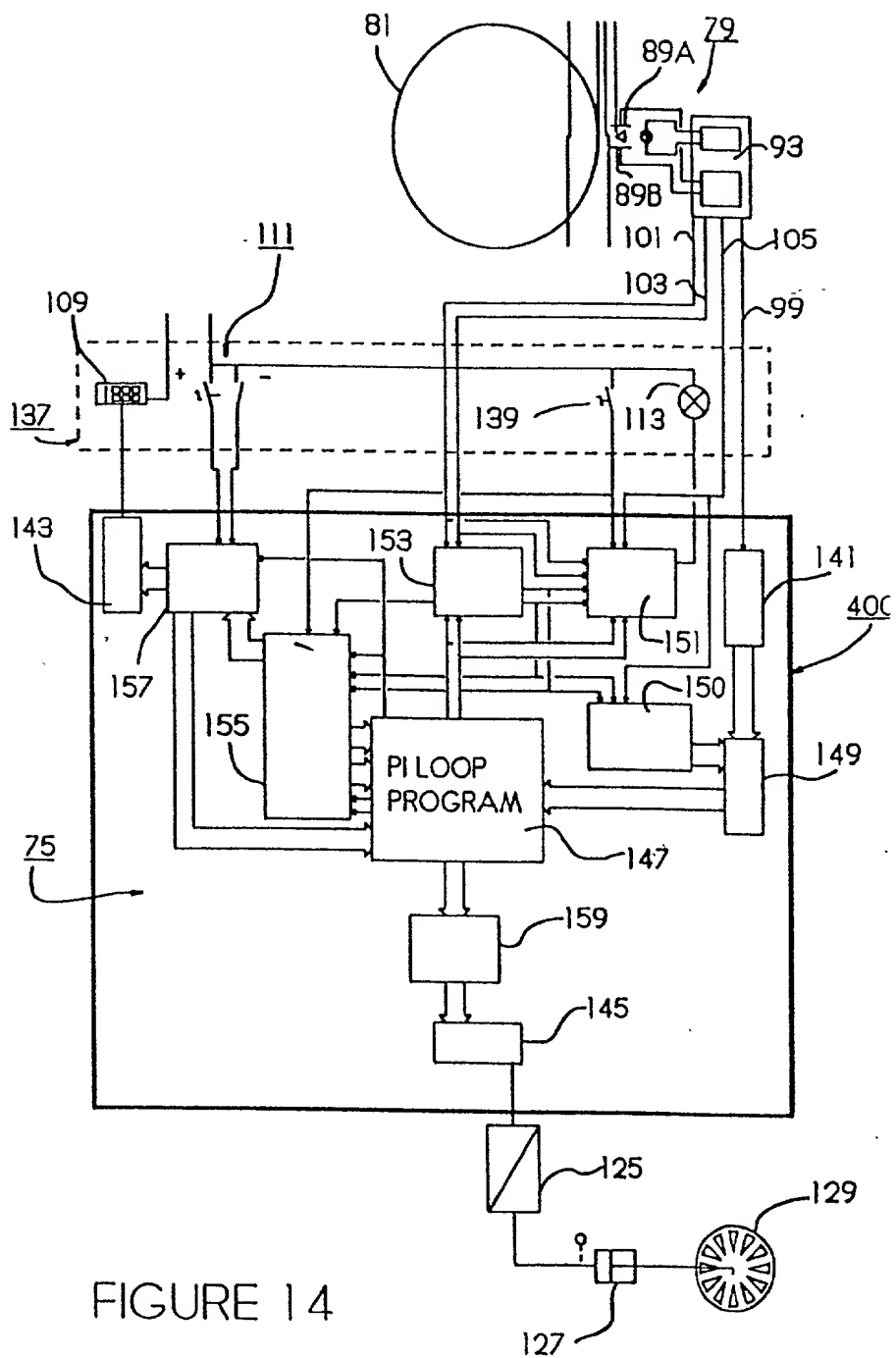


FIGURE 14



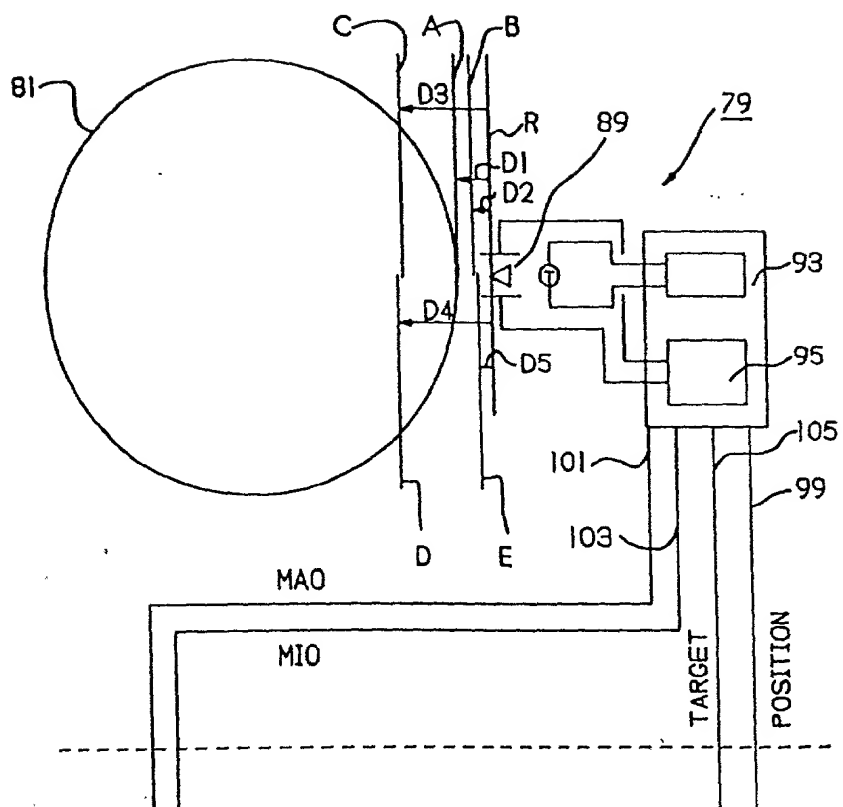


FIGURE 15

FIGURE 16

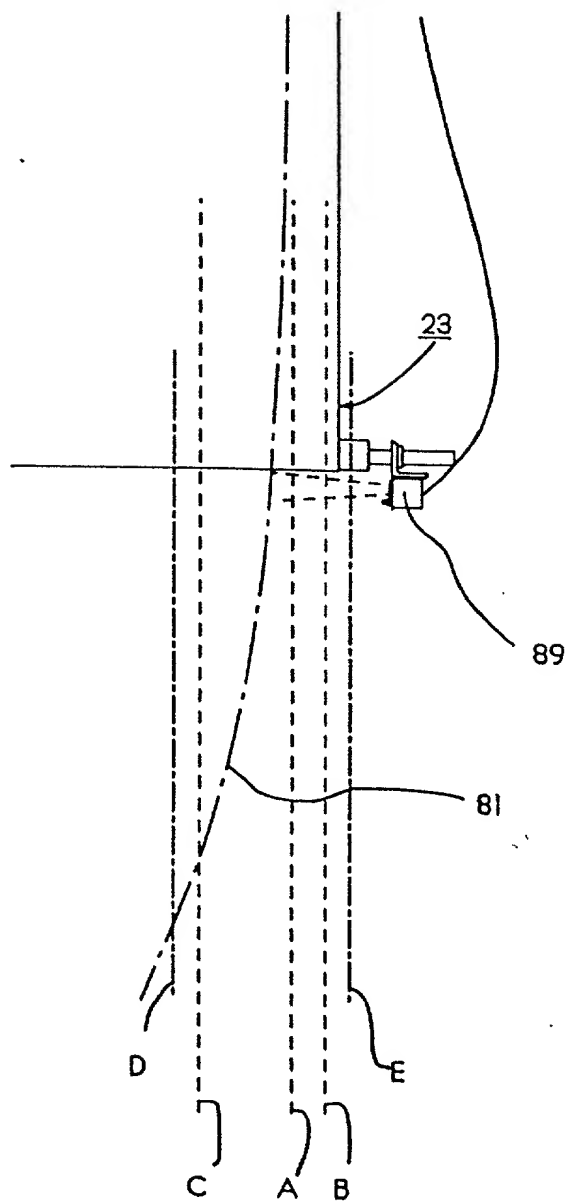


FIGURE 16

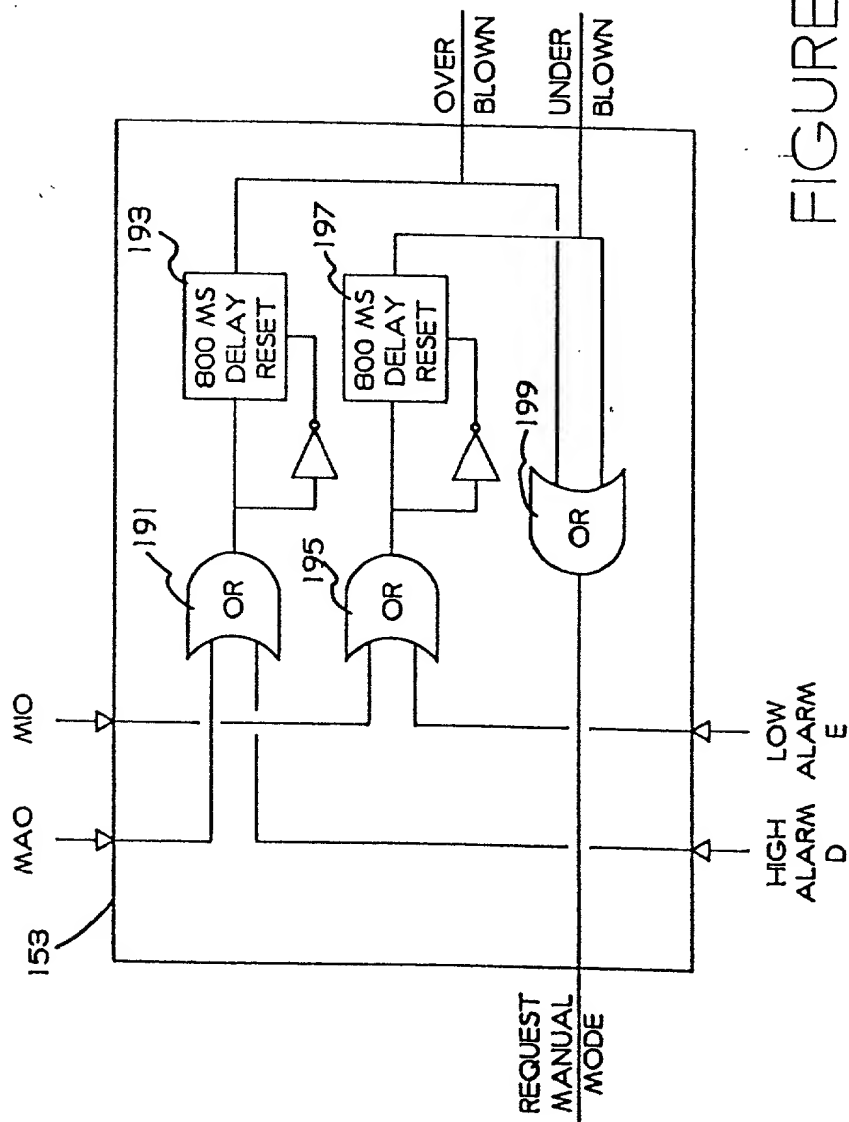


FIGURE 17

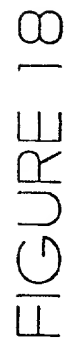
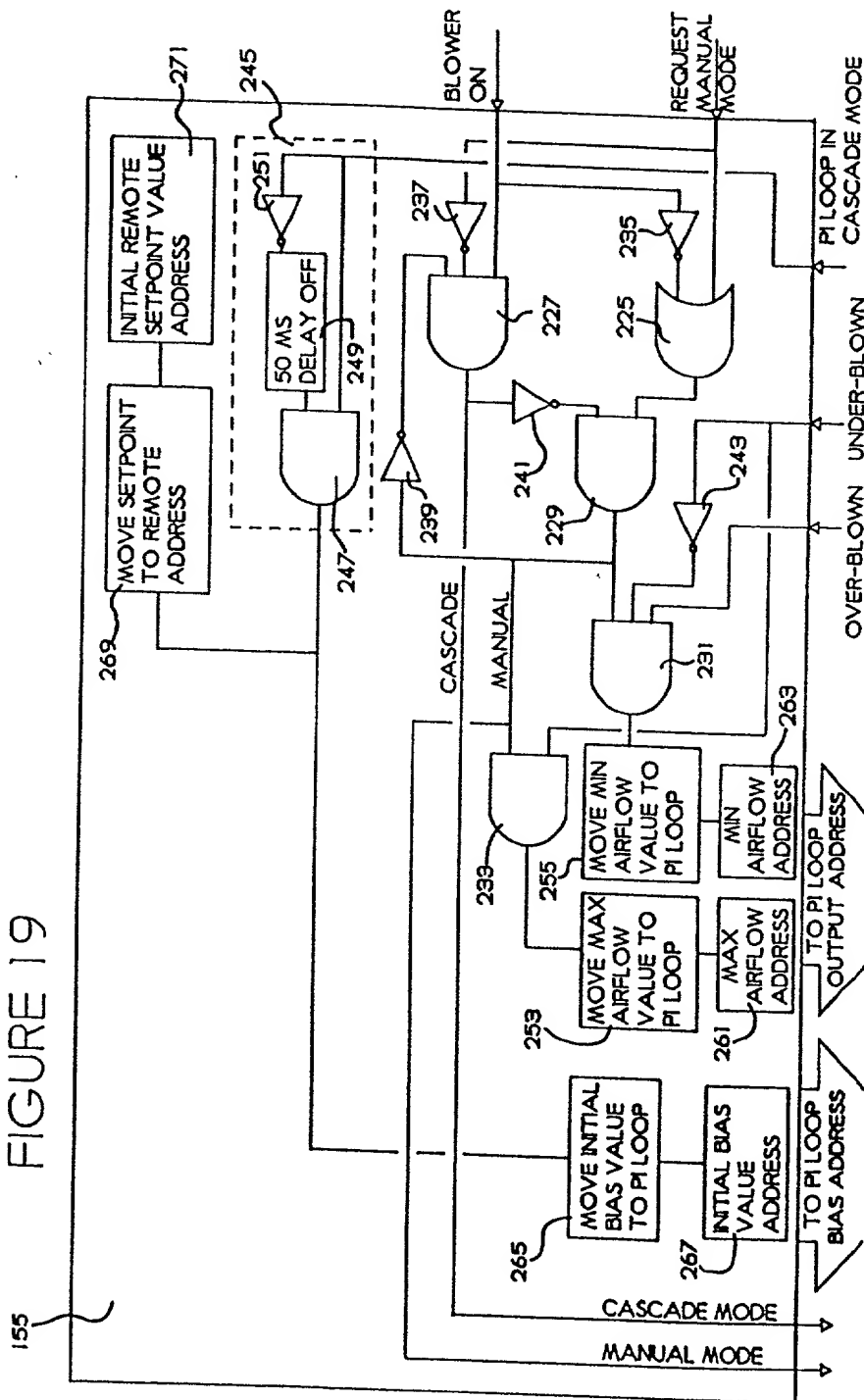


FIGURE 19



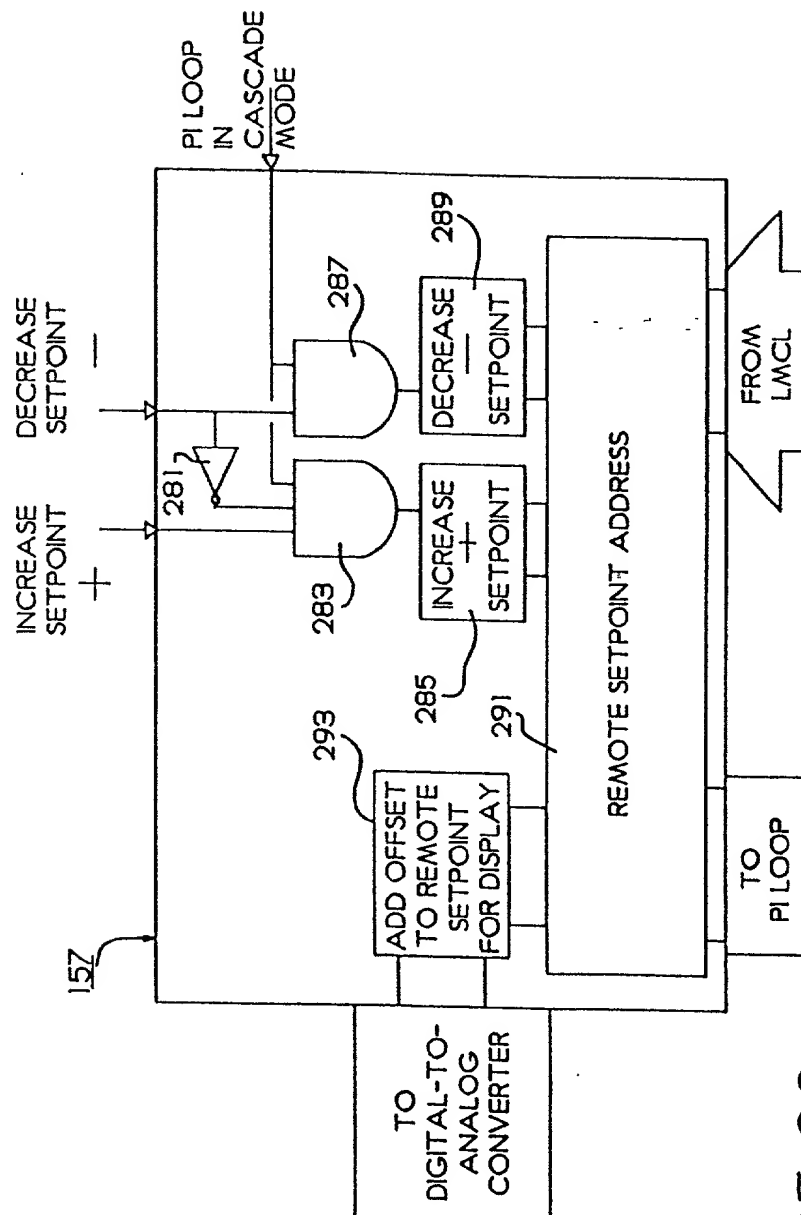


FIGURE 20

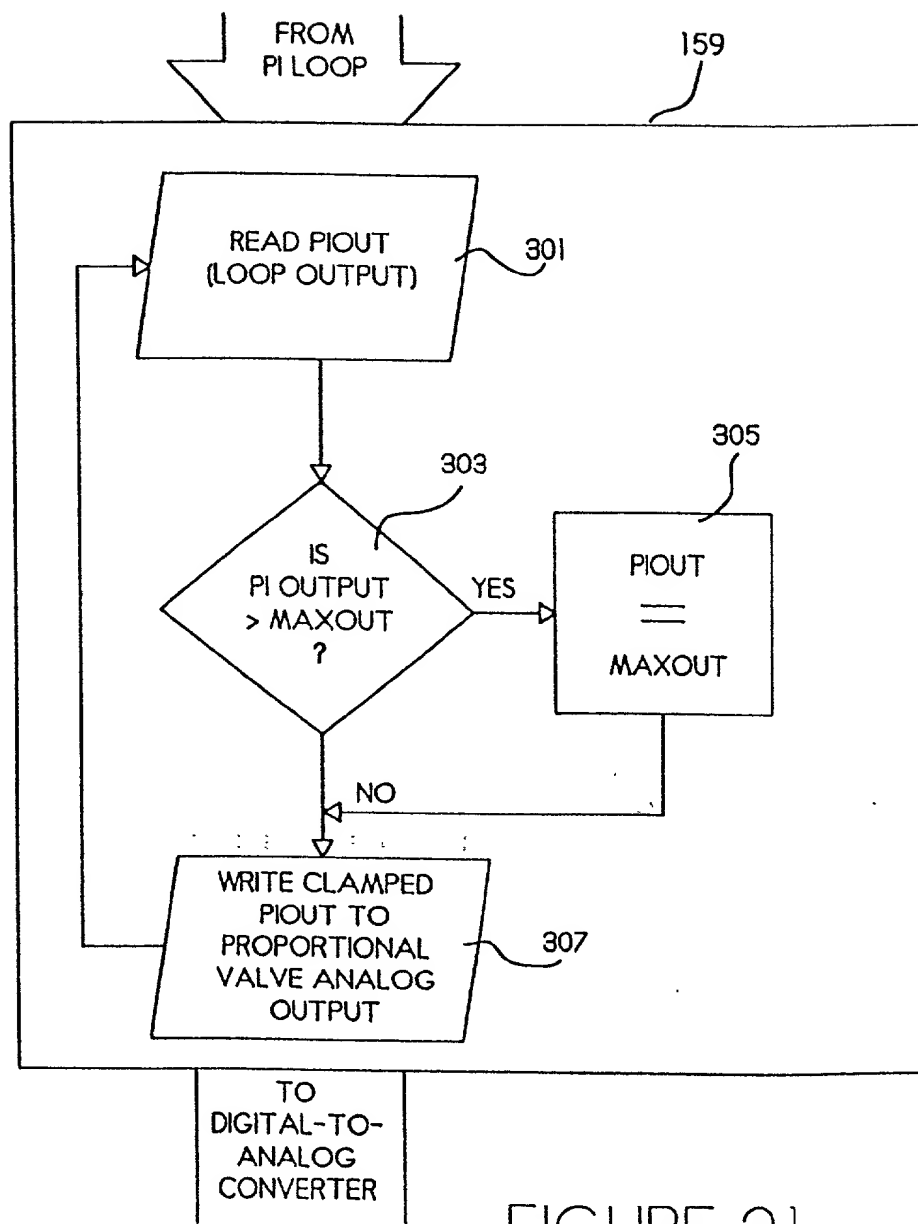
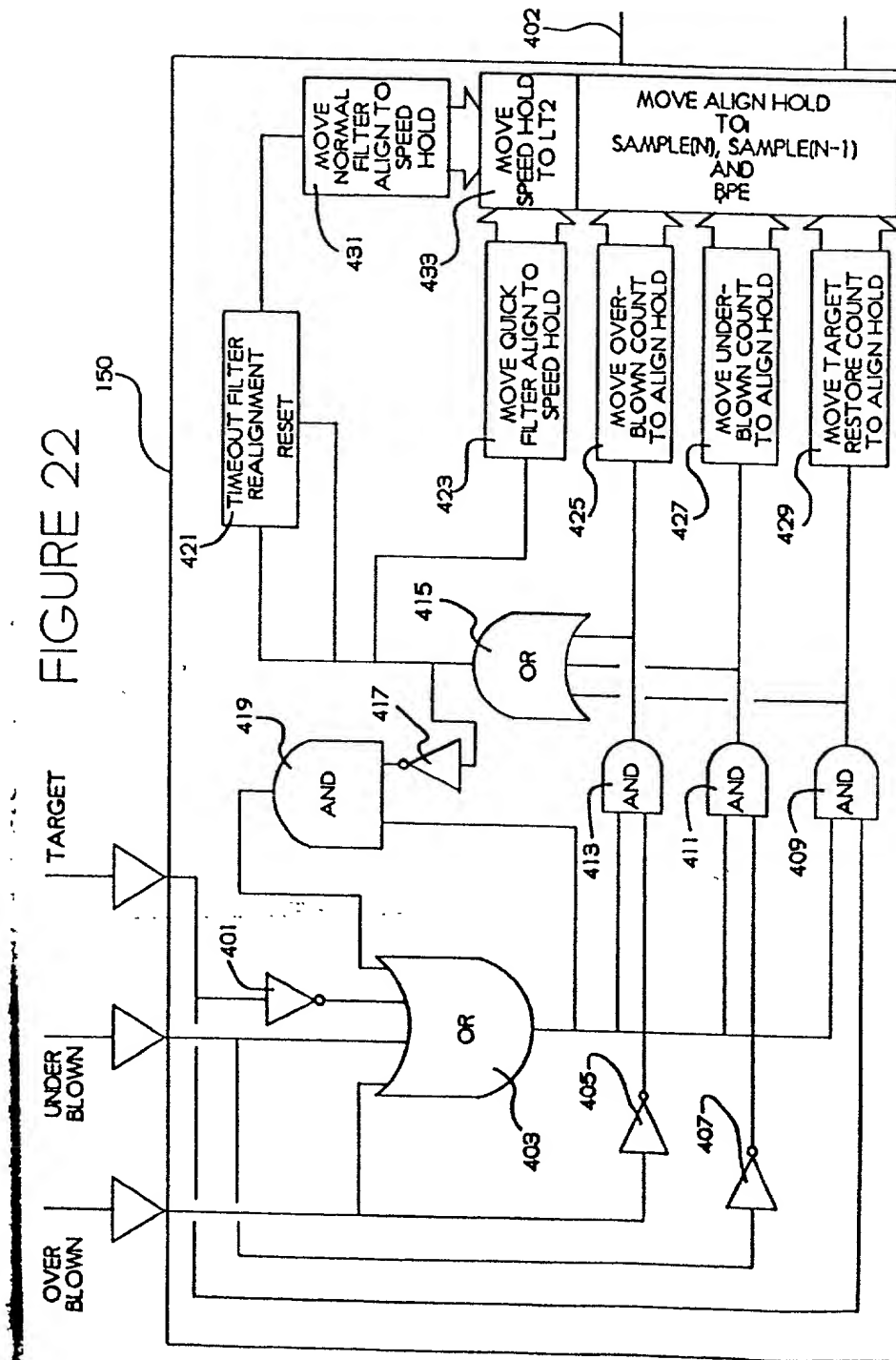


FIGURE 21

FIGURE 22





# CURRENT POSITION SIGNAL

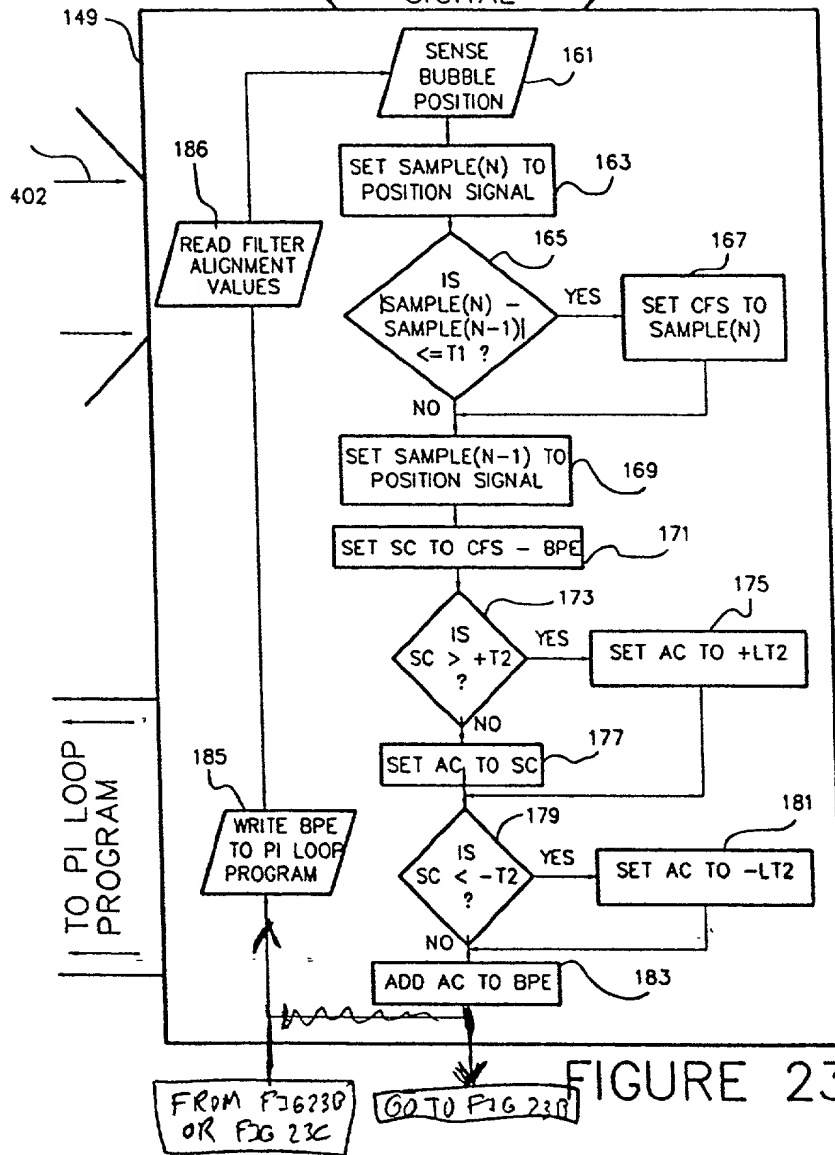


FIGURE 23A

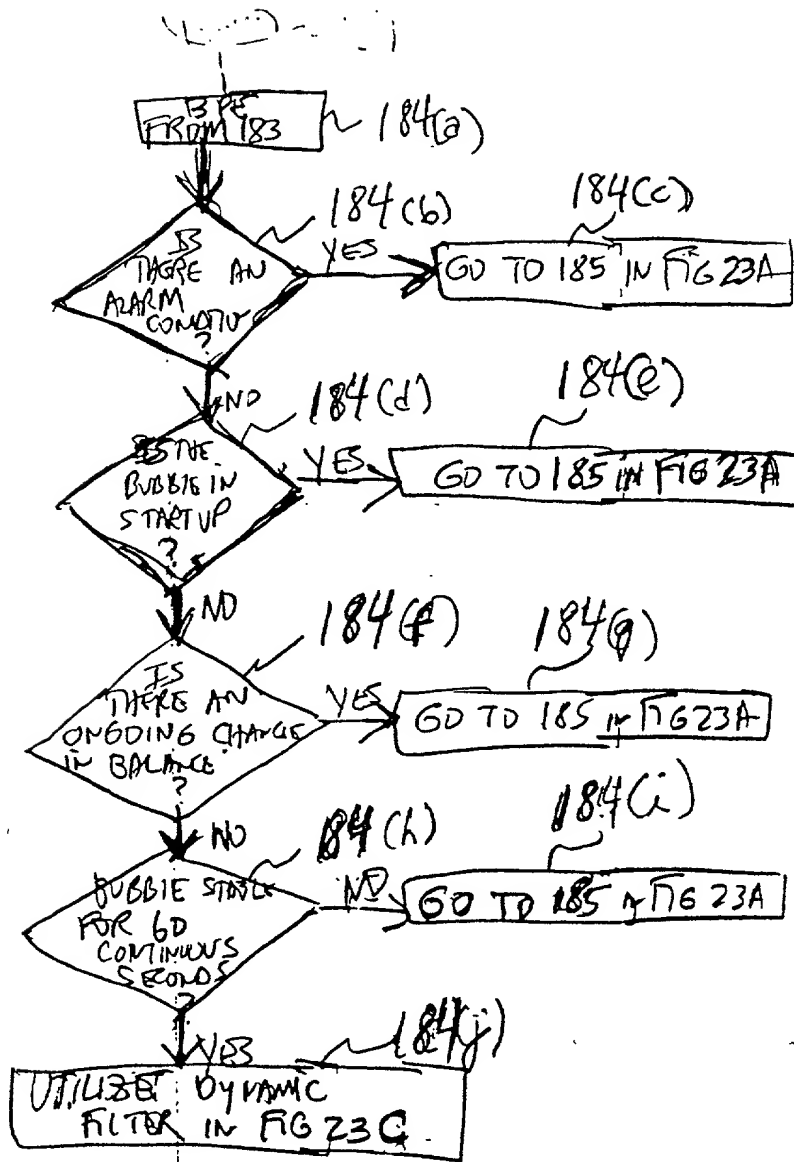


FIGURE 23B

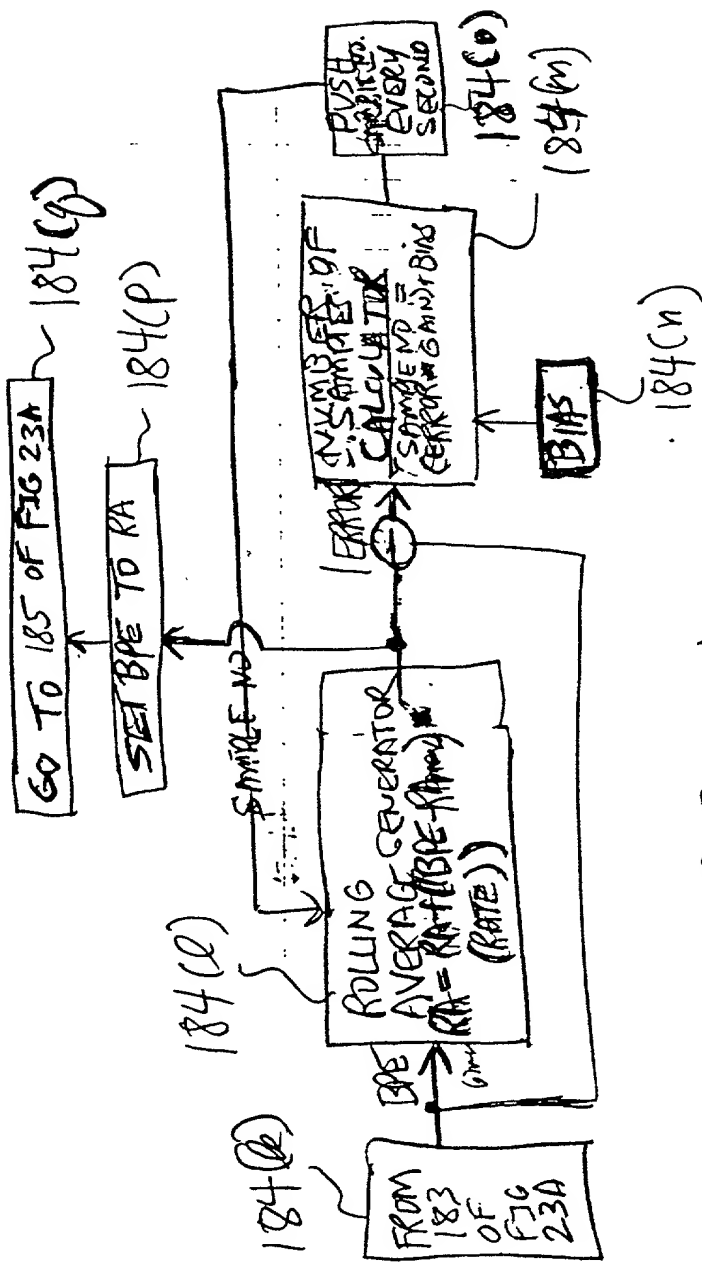


FIG 23A

Various IBC Signals  
Without Dynamic Filter

Engineering Units  
(Thousands)

TIME (HHMMSS)

(184a)

(184r)

Value

Bubble Position

Figure 23D

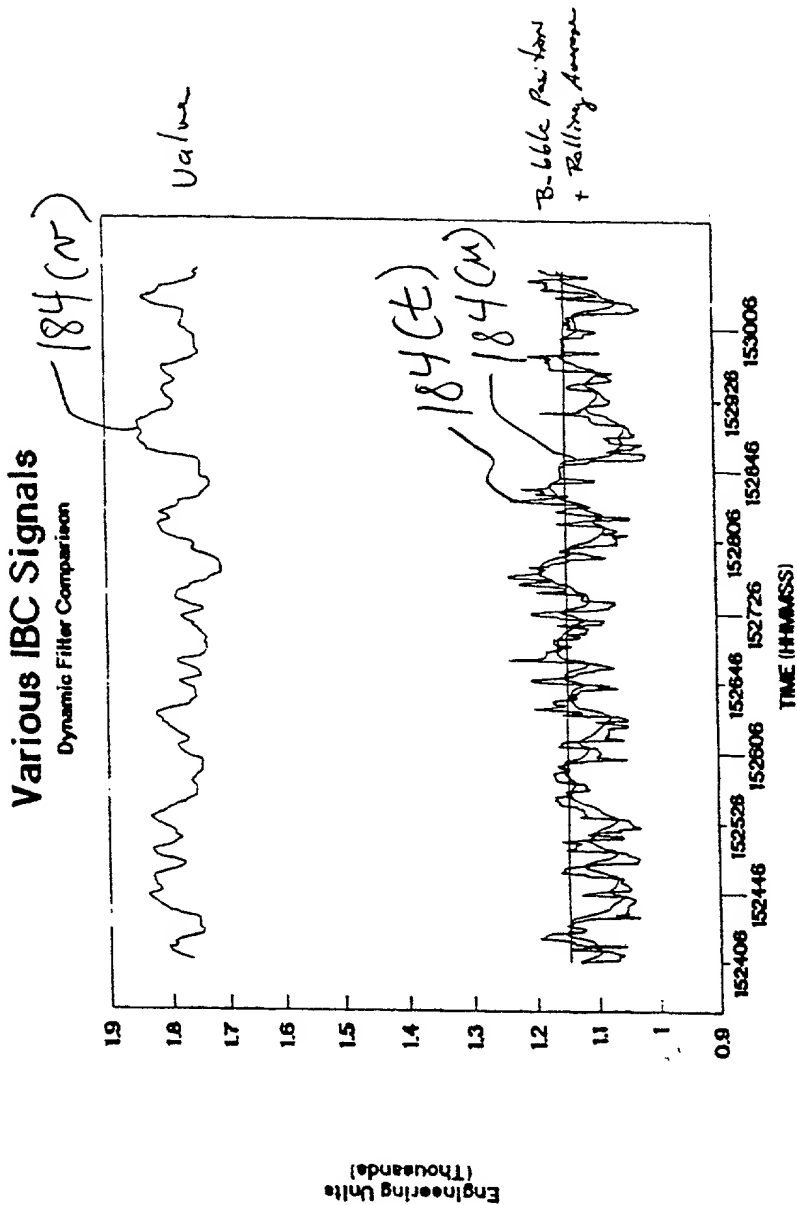


Figure 23E

**Frequency Distribution Comparison**  
Dynamic Filter Vs. BPE

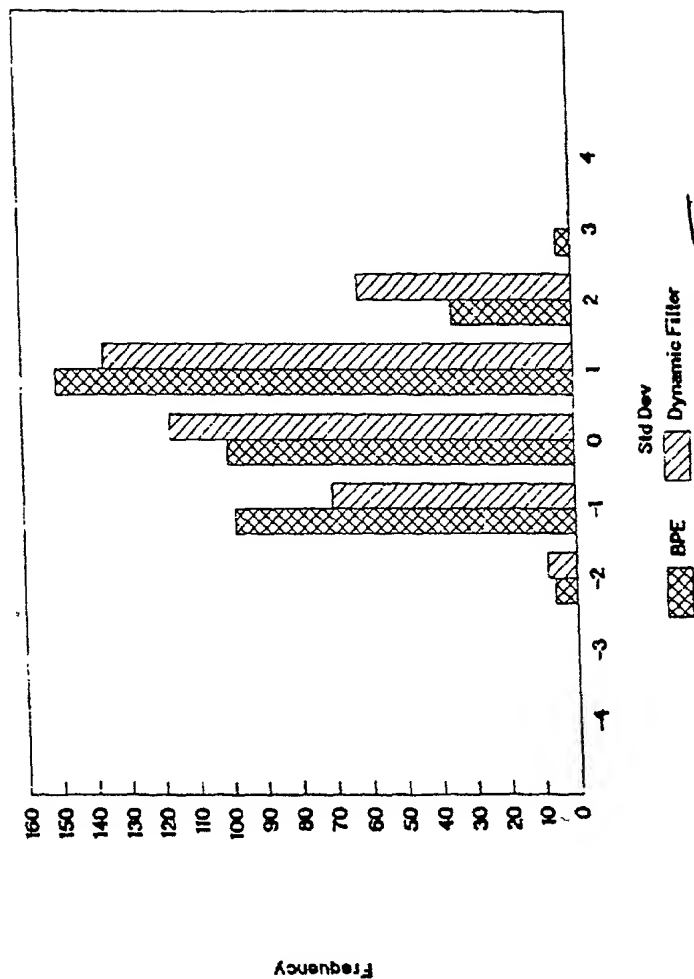


FIGURE 23F

# Various IBC Signals Start-Up With Dynamic Filter

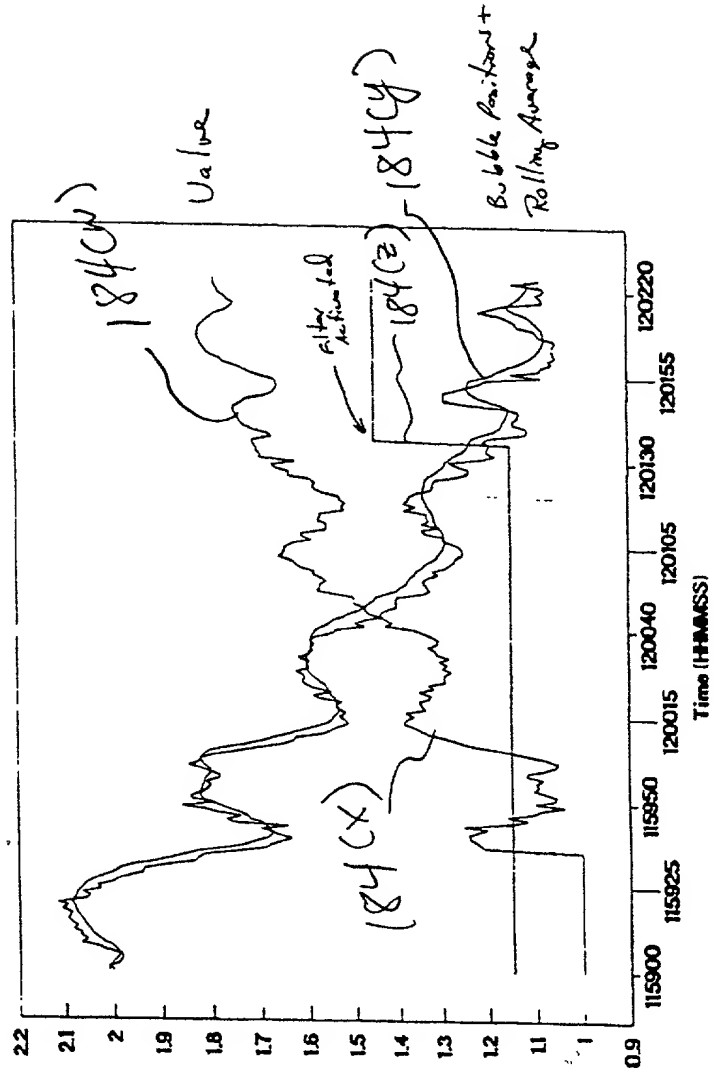


FIG 23G

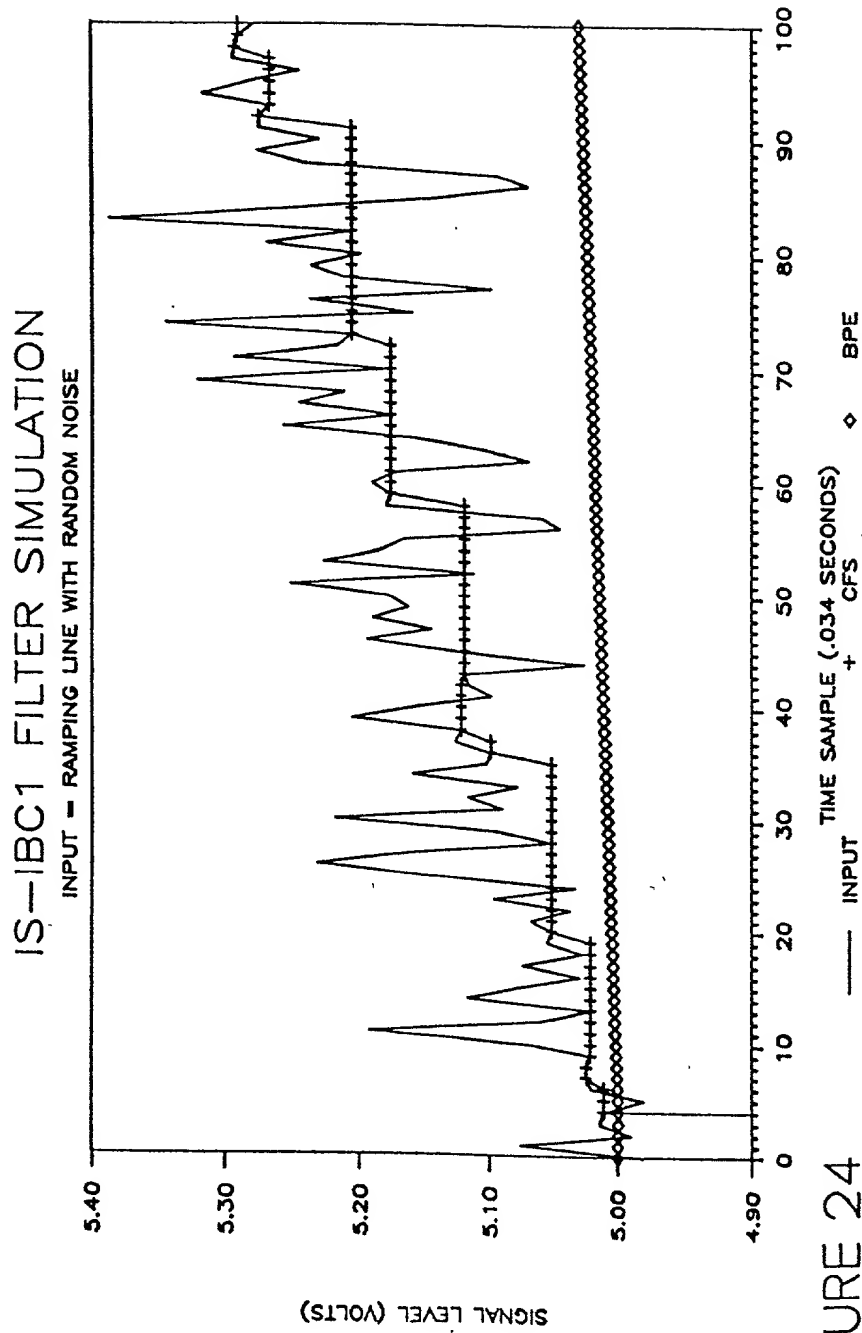


FIGURE 24



FIGURE 25A

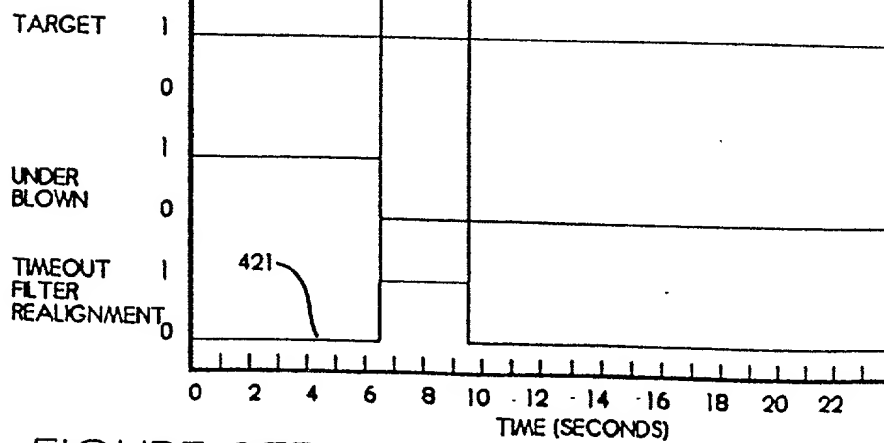
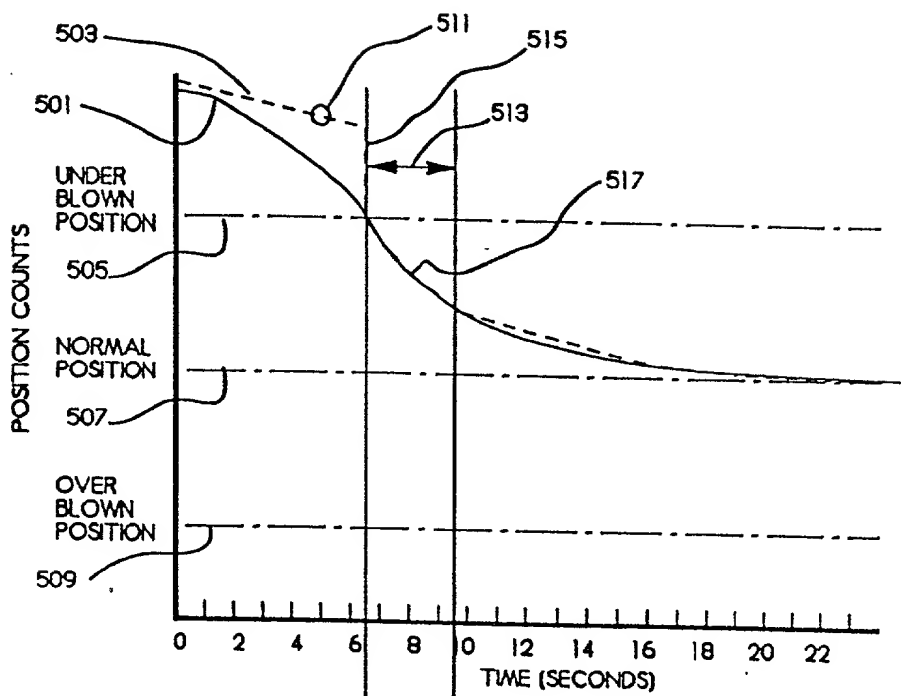


FIGURE 25B

FIGURE 26A

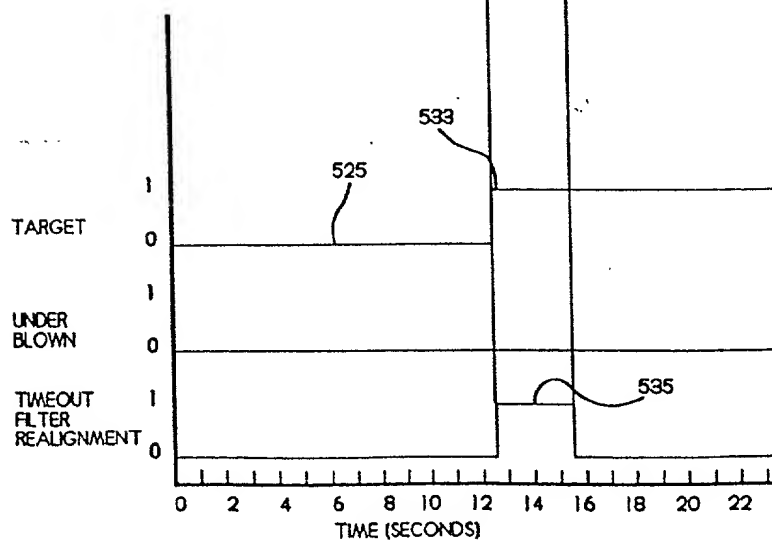
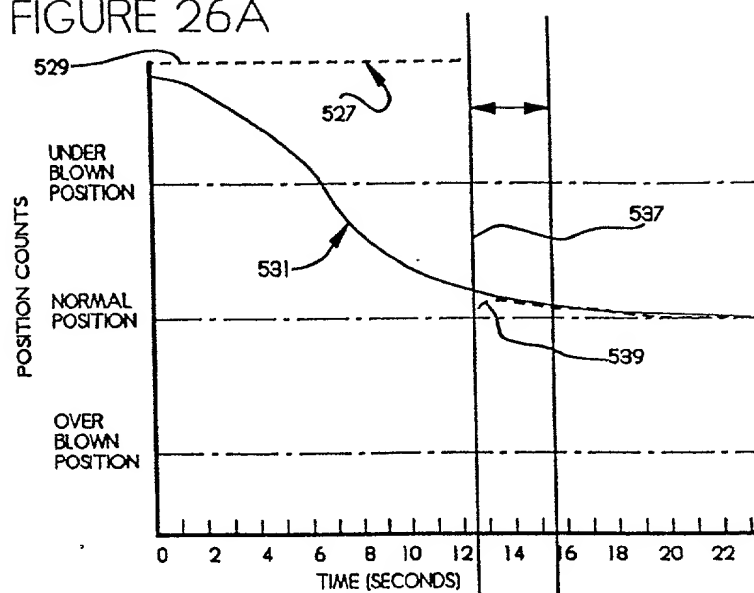


FIGURE 26B

FIGURE 27A

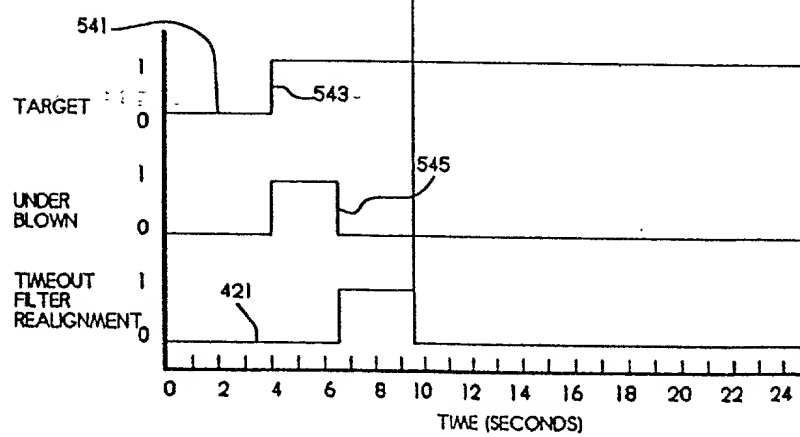
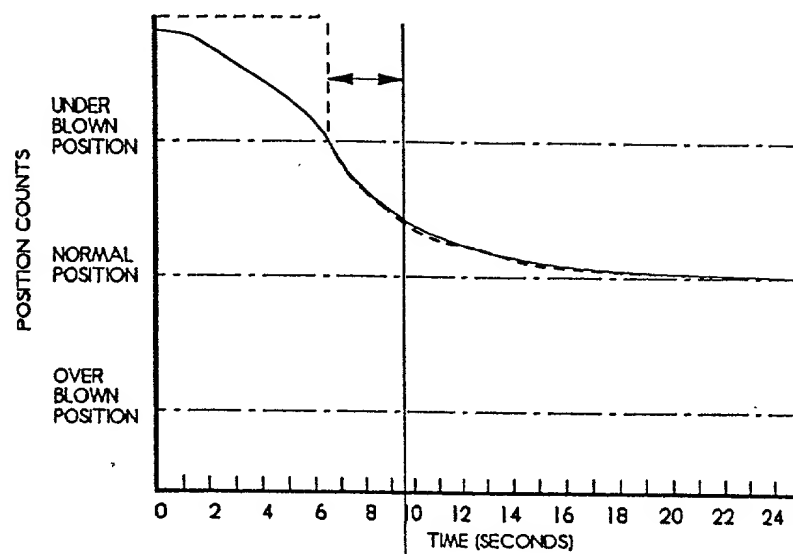


FIGURE 27B

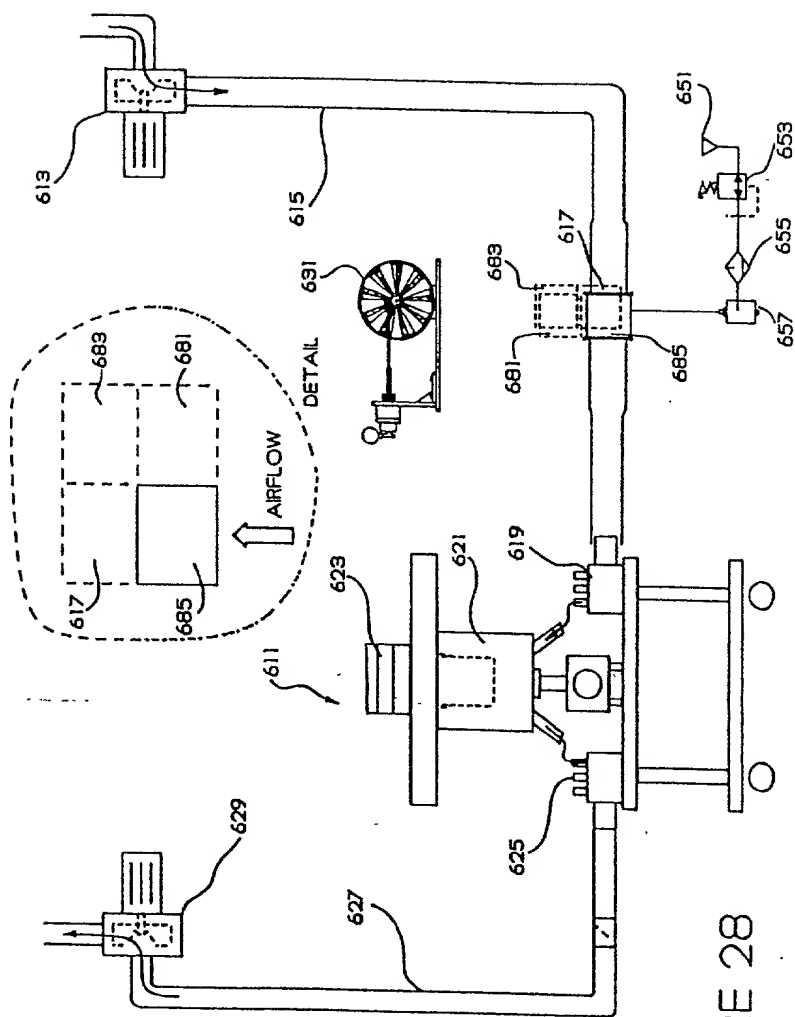


FIGURE 28

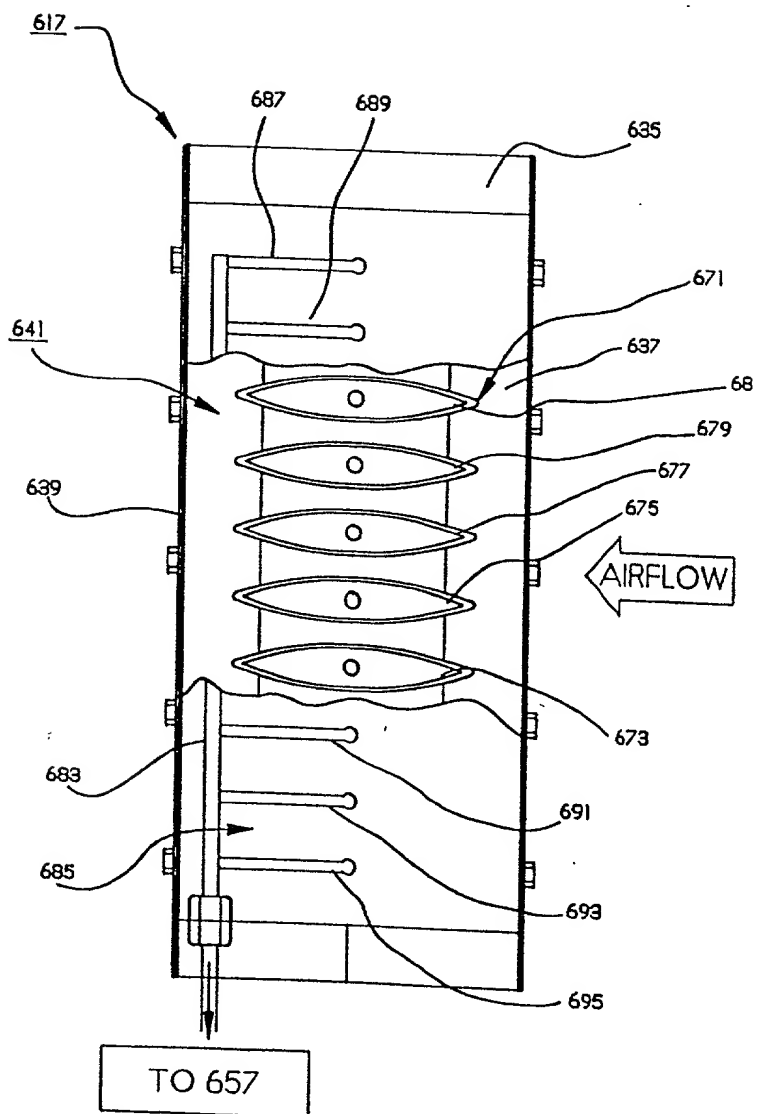


FIGURE 29

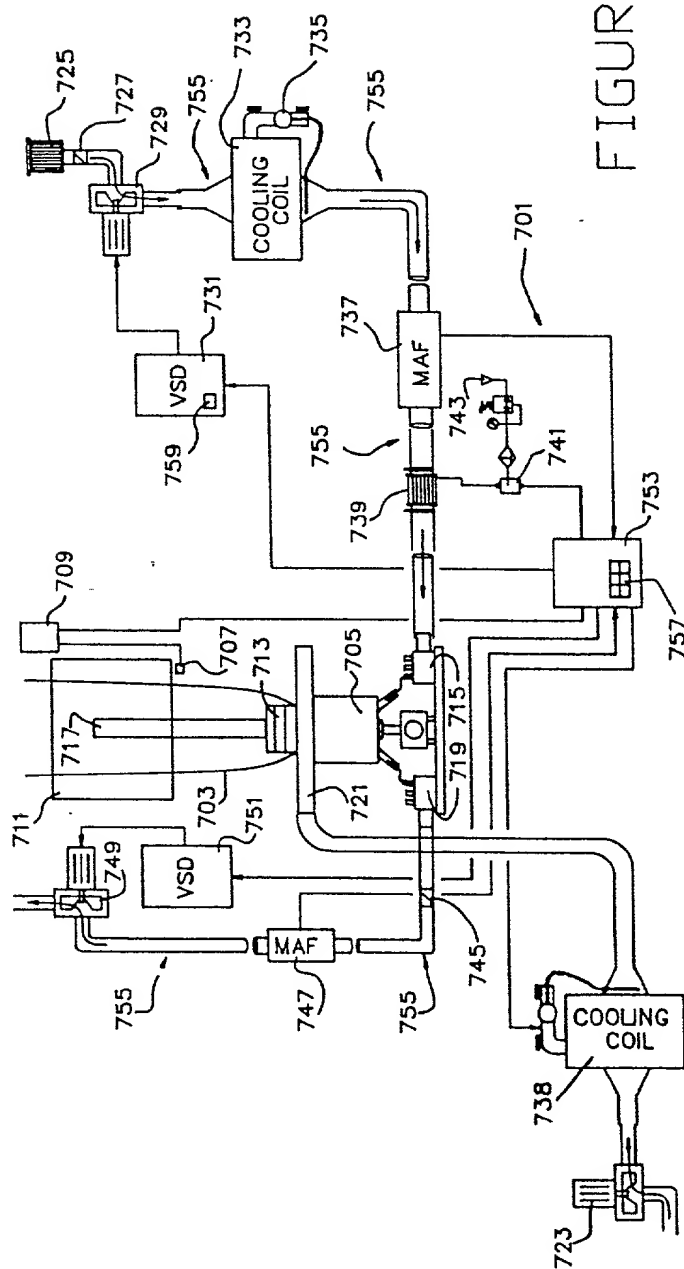


FIGURE 30

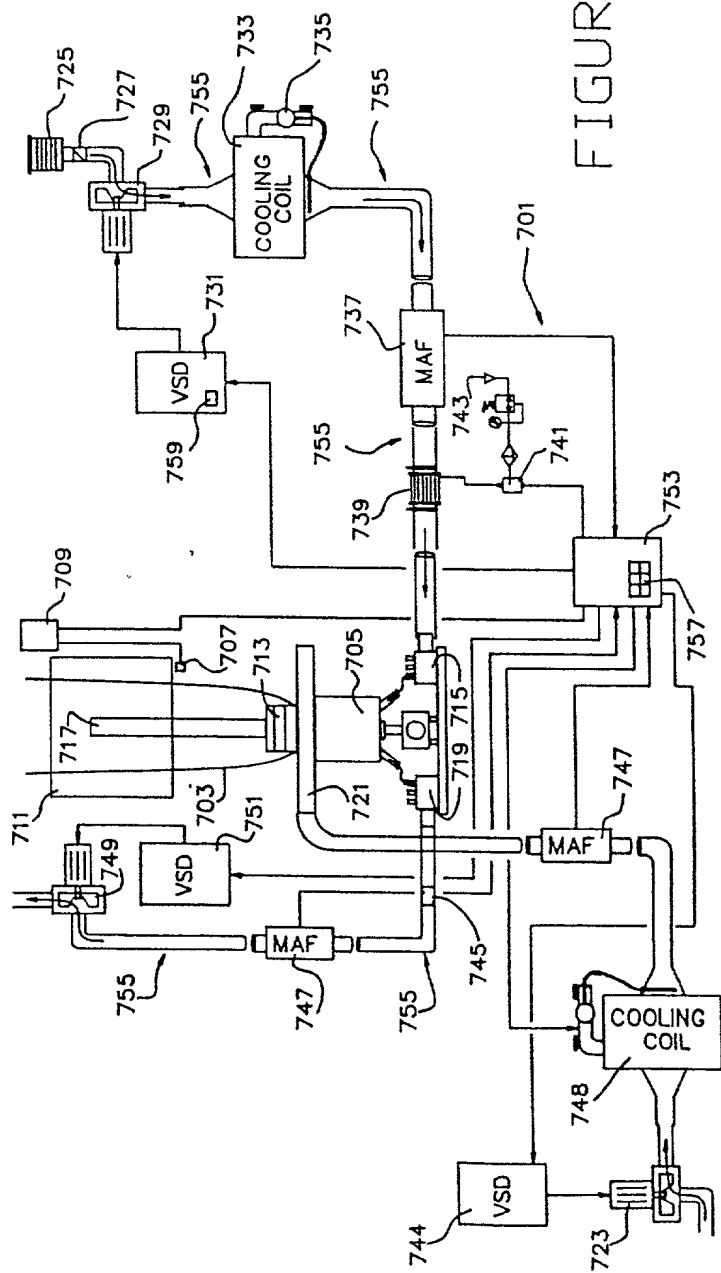


FIGURE 31

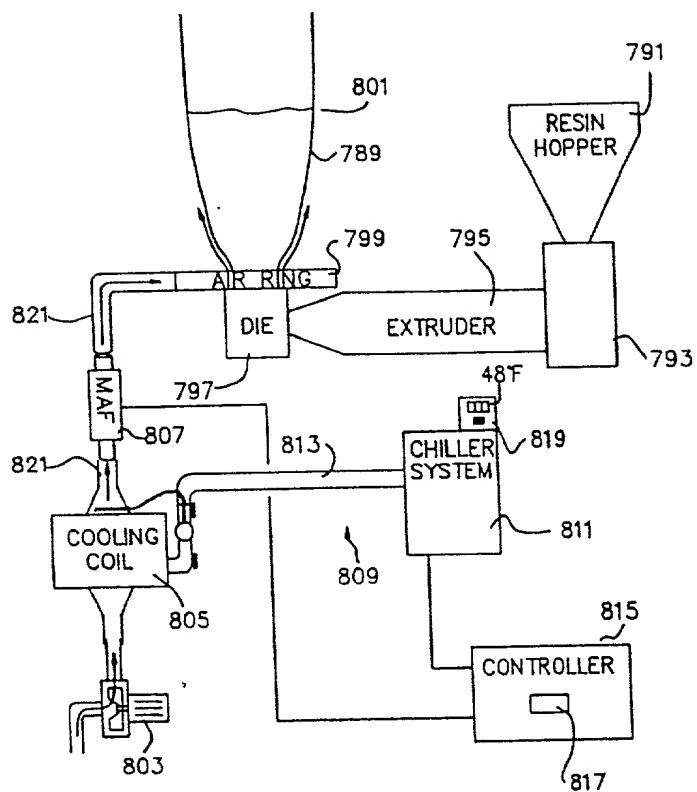


FIGURE 32



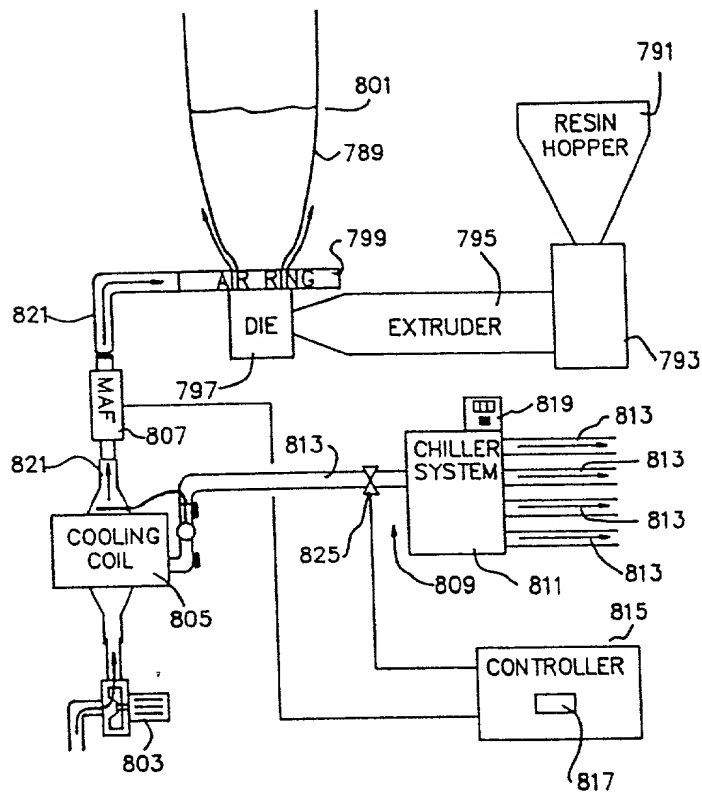


FIGURE 33

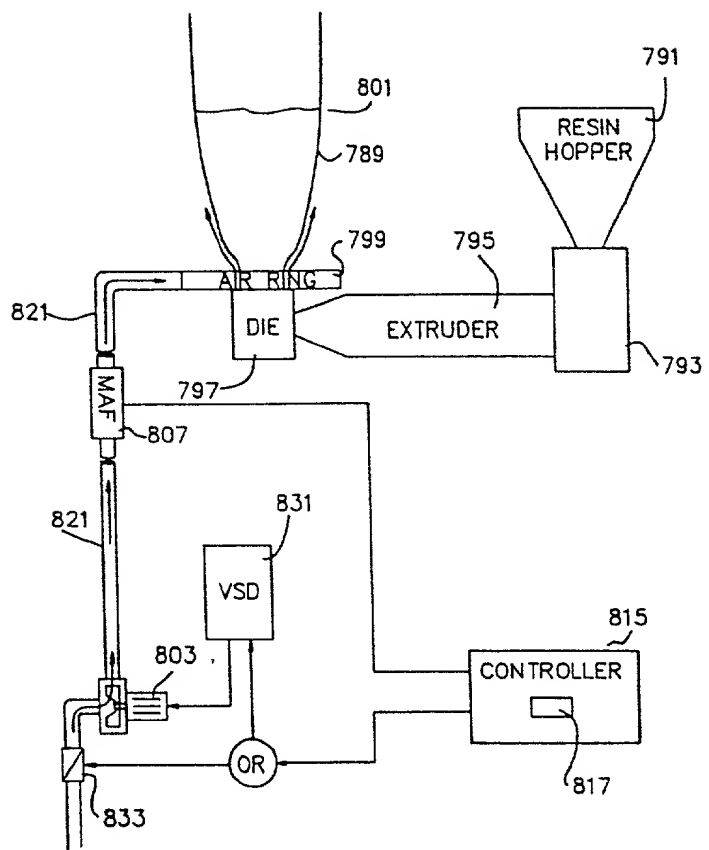


FIGURE 34

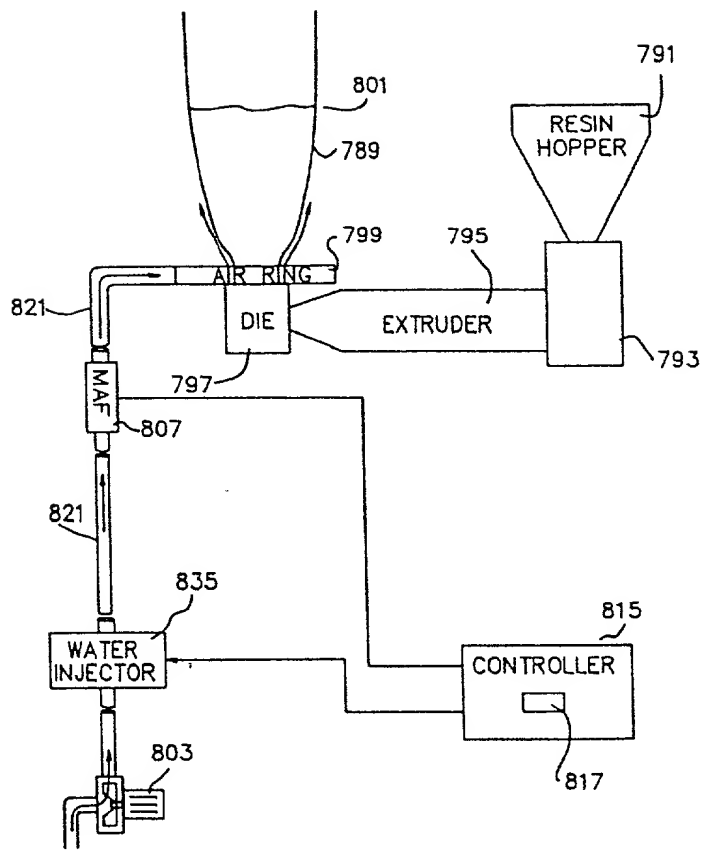


FIGURE 35

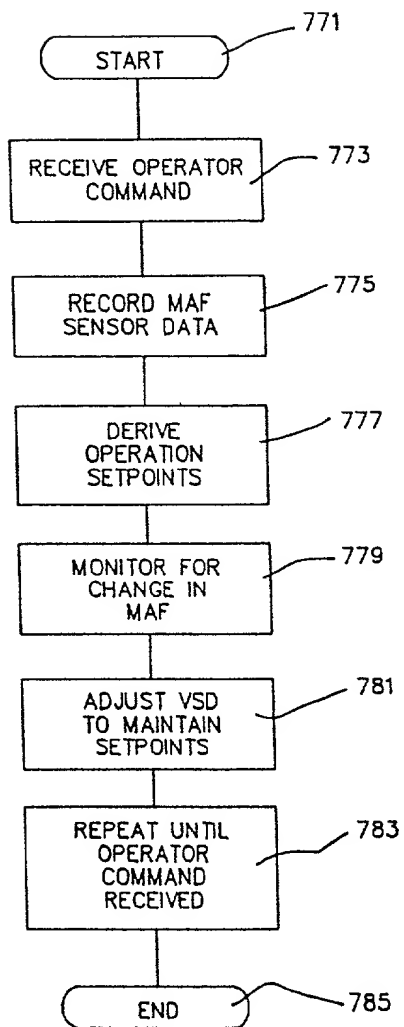


FIGURE 36

PATENT SKETCH FORM

Attorney \_\_\_\_\_

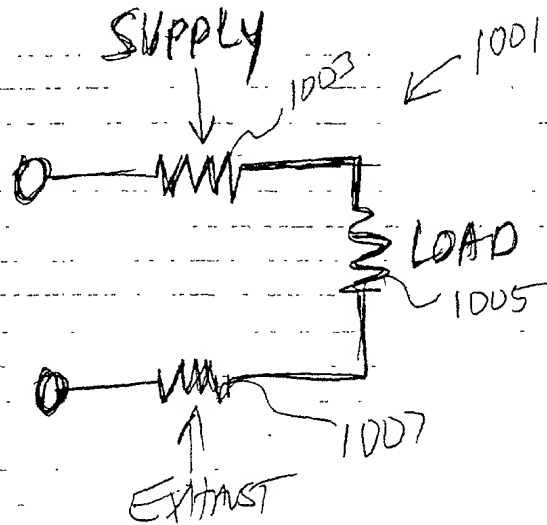


FIGURE 37A  
(PRIOR ART)

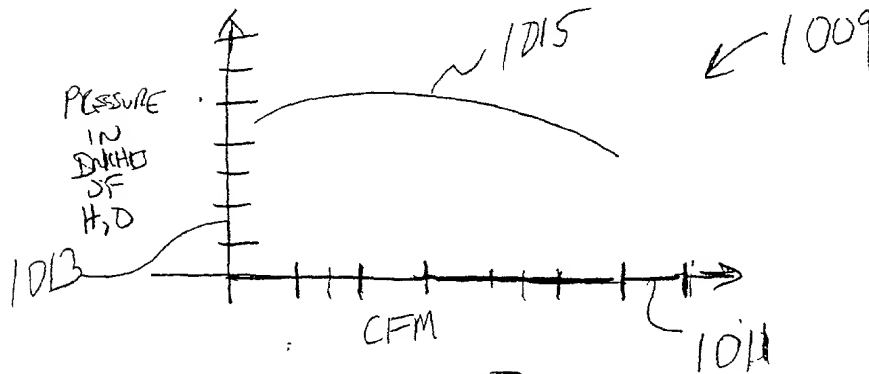


FIGURE 37B  
(PRIOR ART)



FIGURE 37C  
(PRIOR ART)

Attorney



FIGURE 37D

# PATENT SKETCH FORM

Attorney \_\_\_\_\_

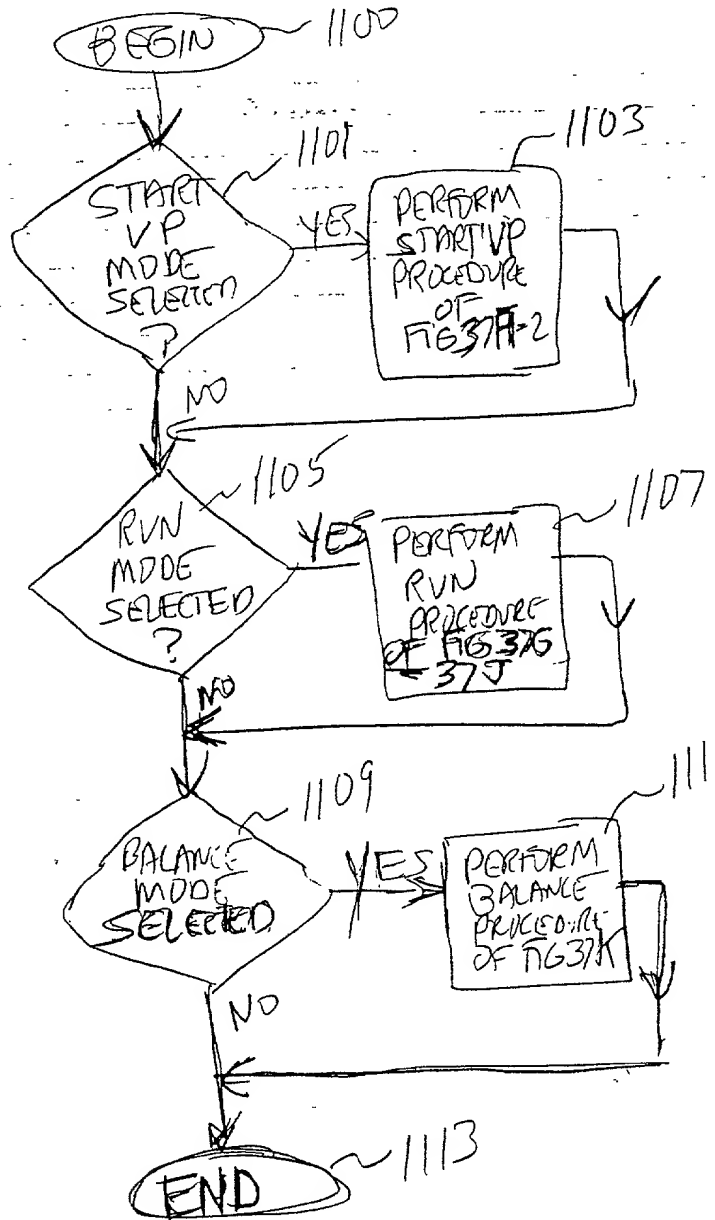


FIGURE 37 E

PATENT SKETCH FORM

Attorney \_\_\_\_\_

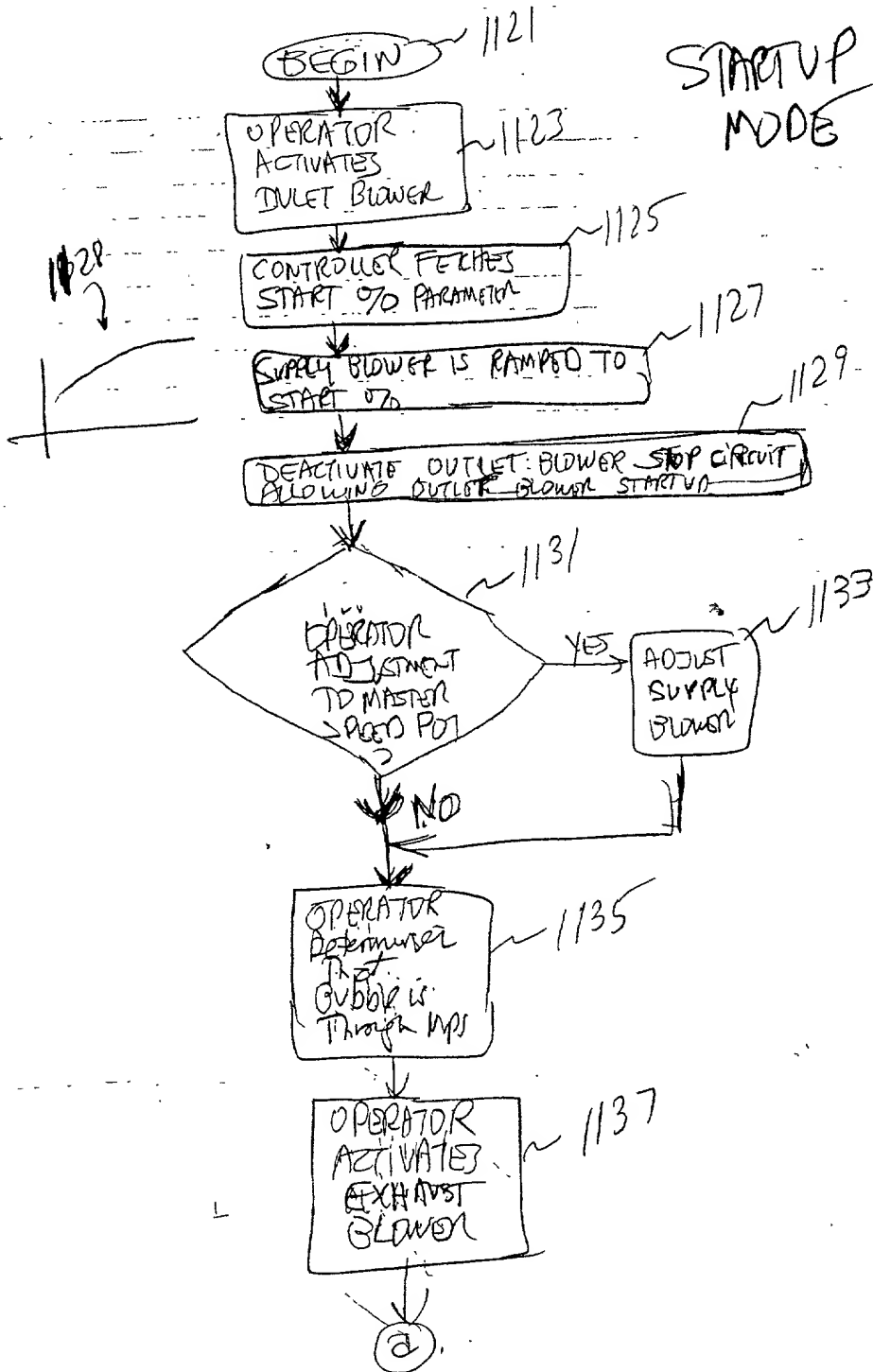


FIG 37 F



# PATENT SKETCH FORM

Attorney \_\_\_\_\_

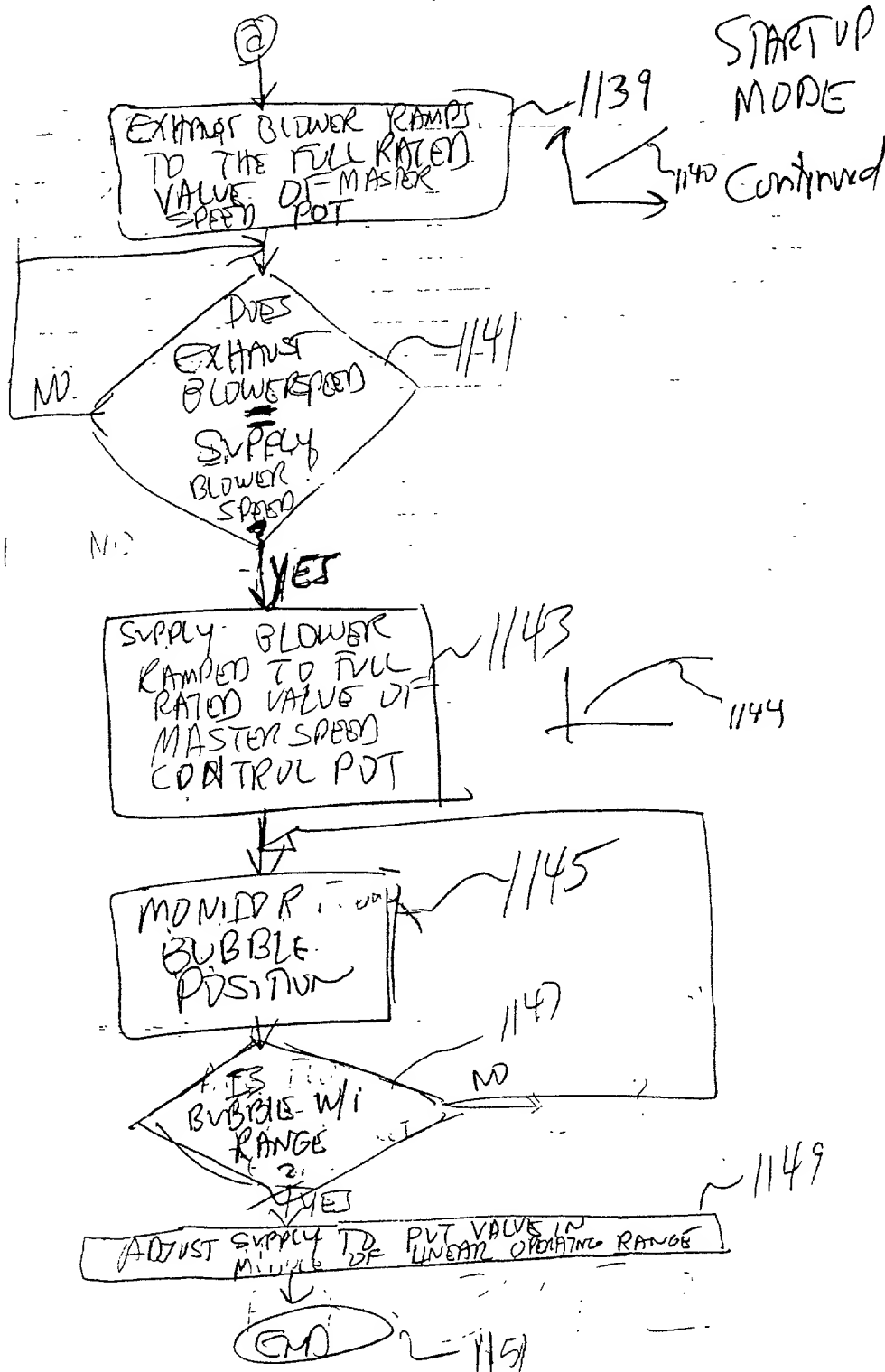


FIGURE 37 F2

09220001 10000000

PATENT SKETCH FORM

Attorney \_\_\_\_\_

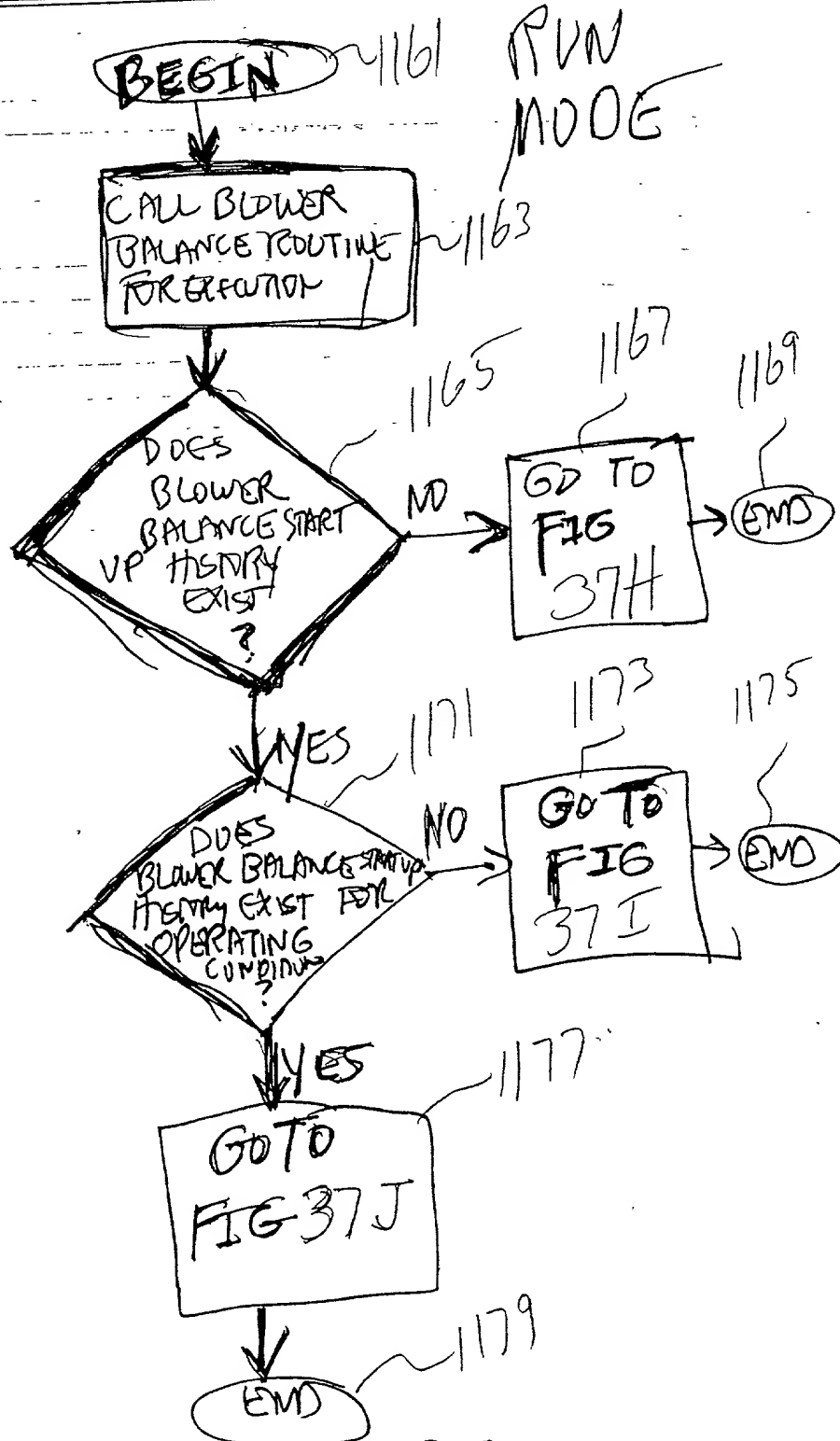


FIGURE 37G

1161 1163 1165 1167 1169 1171 1173 1175 1177 1179

PATENT SKETCH FORM

Attorney \_\_\_\_\_

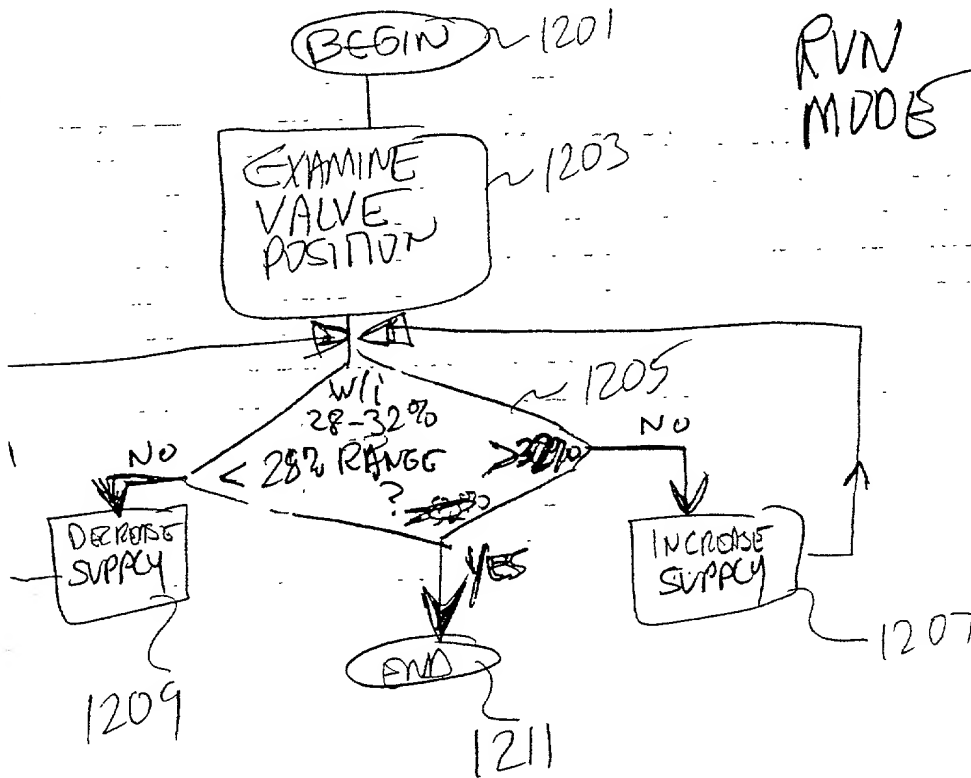


FIGURE 3TH

PATENT SKETCH FORM

Attorney \_\_\_\_\_

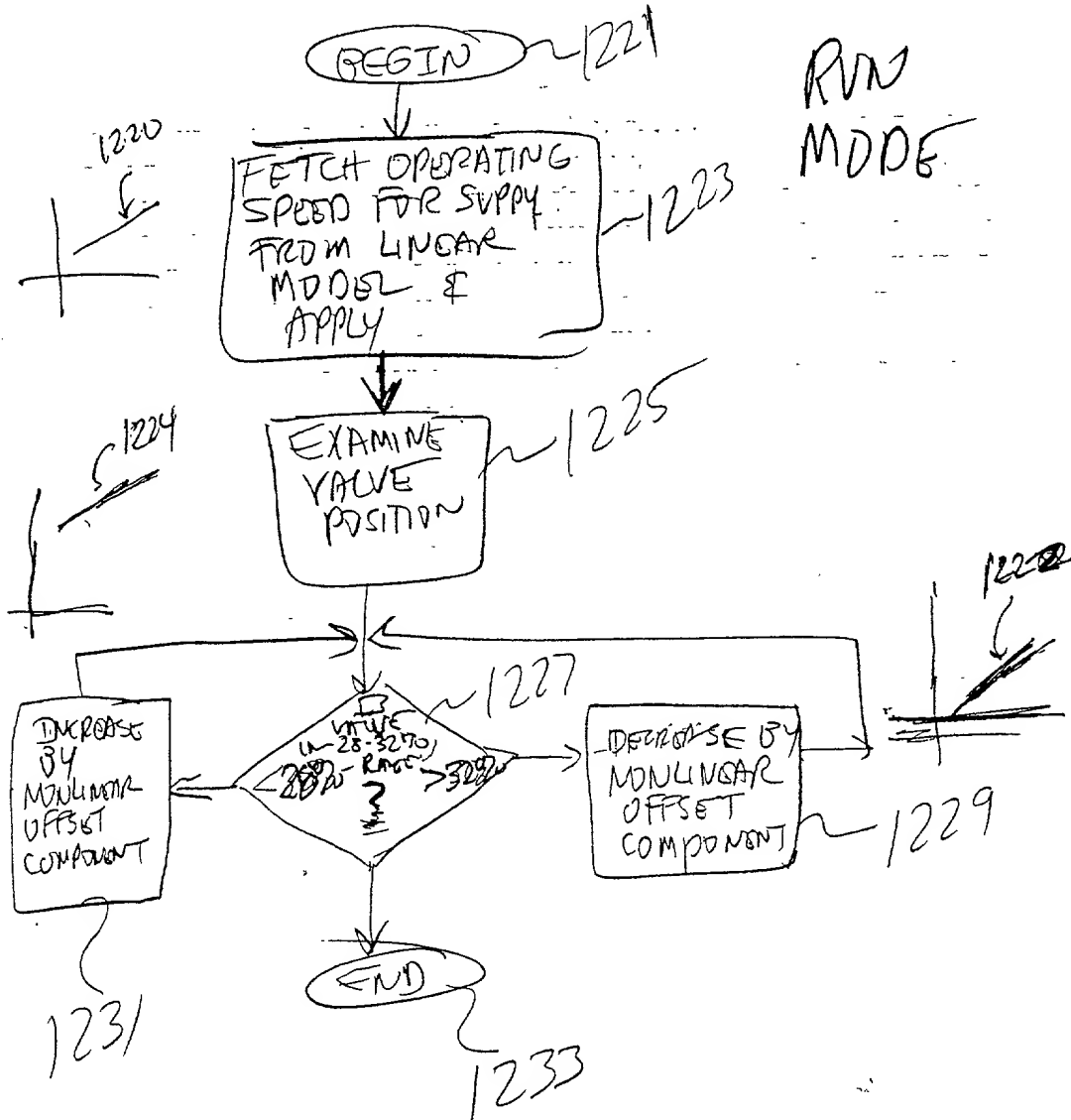


FIGURE 37 I

PATENT SKETCH FORM

Attorney \_\_\_\_\_

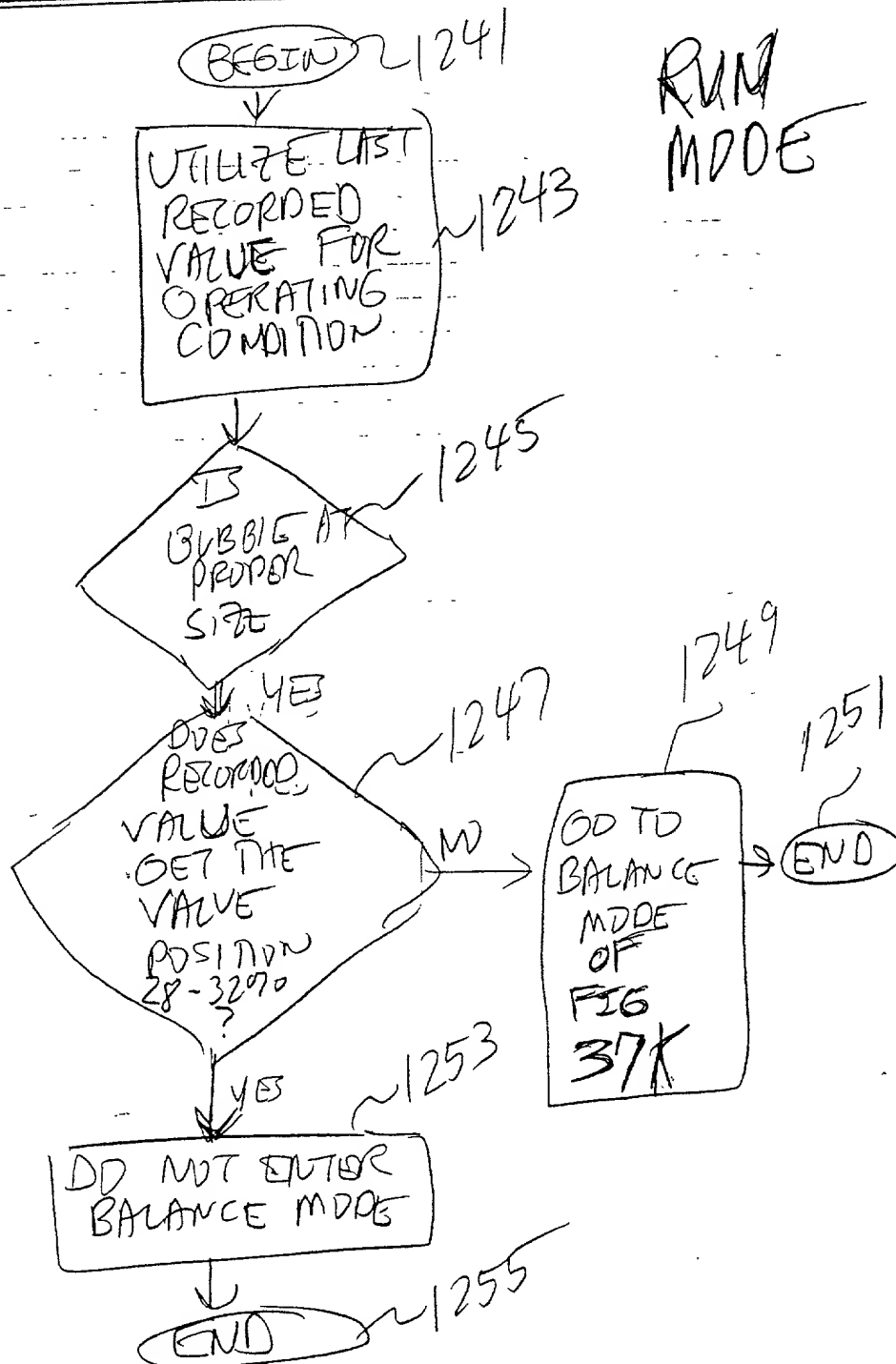


FIGURE 37J

PATENT SKETCH FORM

Attorney \_\_\_\_\_

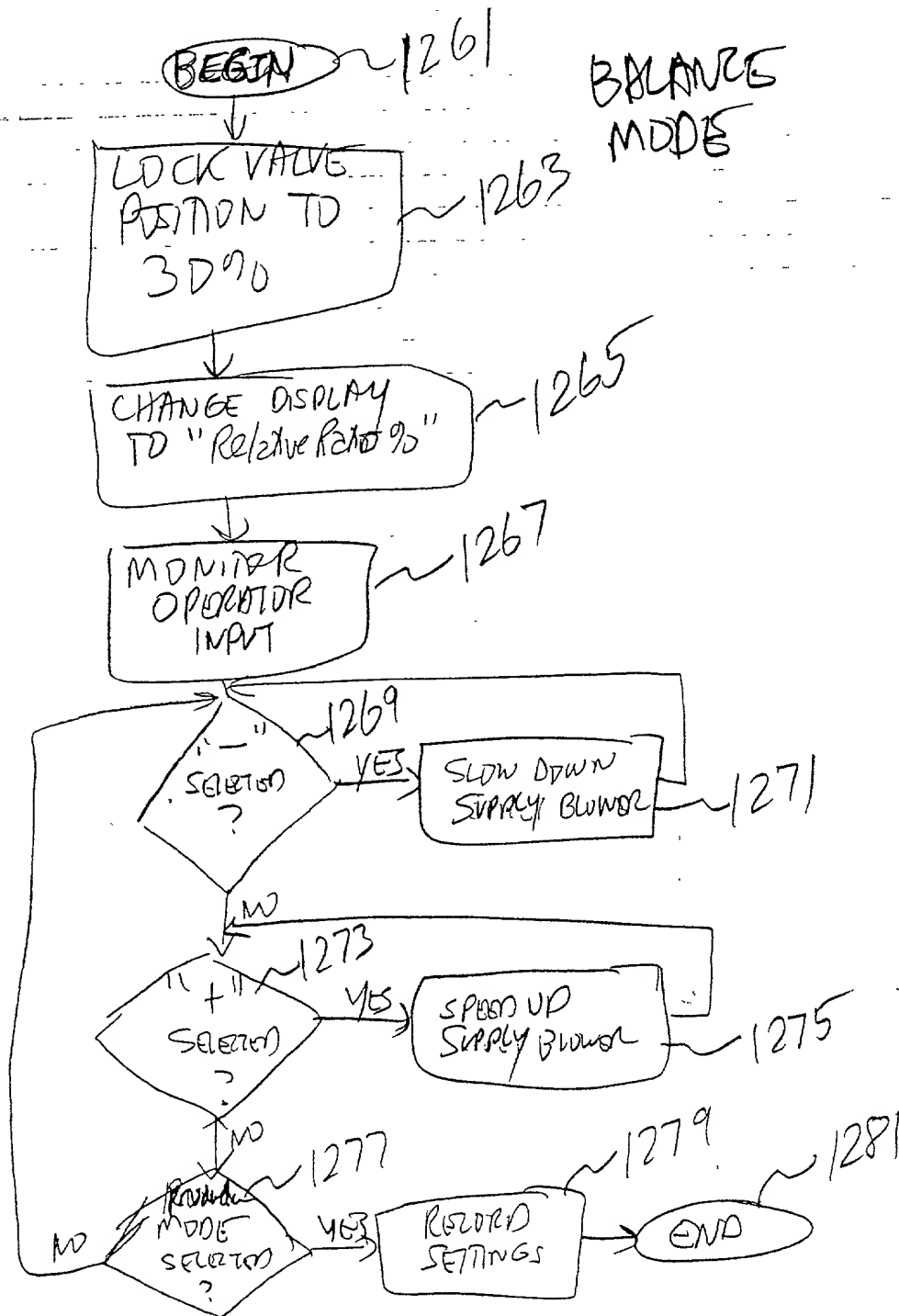


FIGURE 37K

PATENT SKETCH FORM

Attorney \_\_\_\_\_

1301 ↓ MASTER SPEED POT SETTING	1303 ↓ (SUPPLY SPEED)	1305 ↓ REFERENCE VOLTS
A 70	AC	BD
B 90	AG	BF
⋮		
Z 0%	AM	BX

FIGURE 37L

PATENT SKETCH FORM

Attorney \_\_\_\_\_

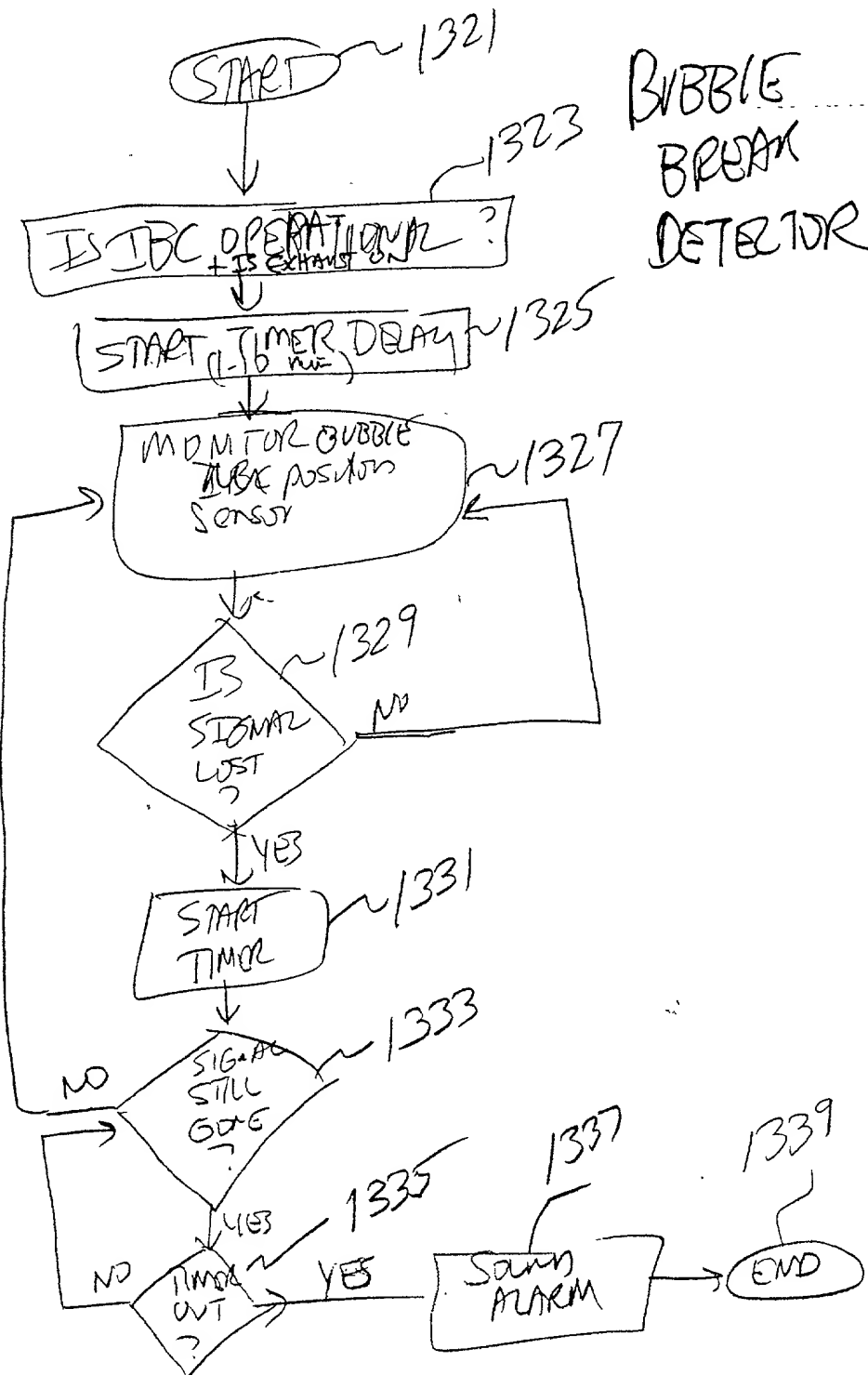
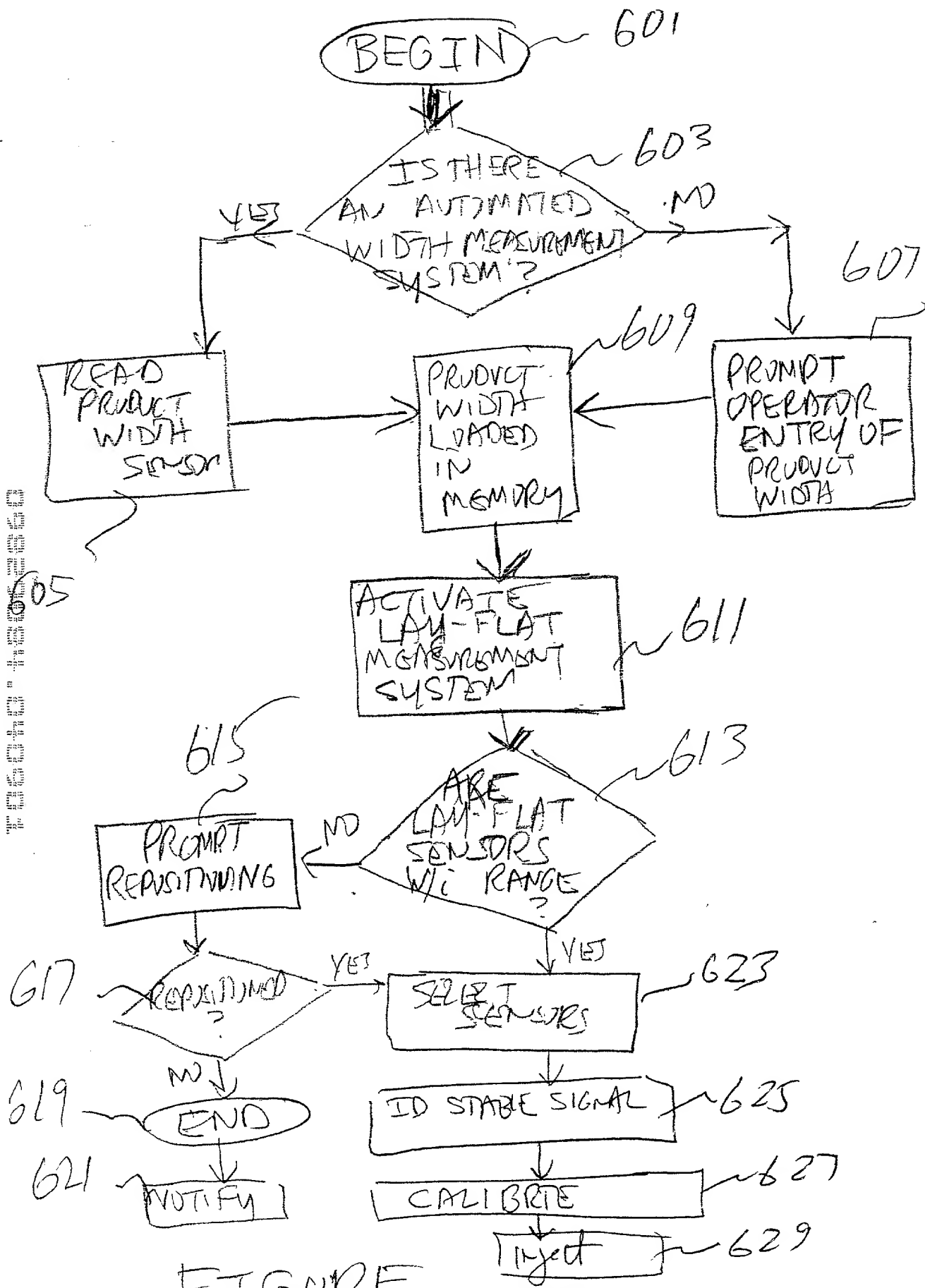


FIGURE 37M





FIGURE

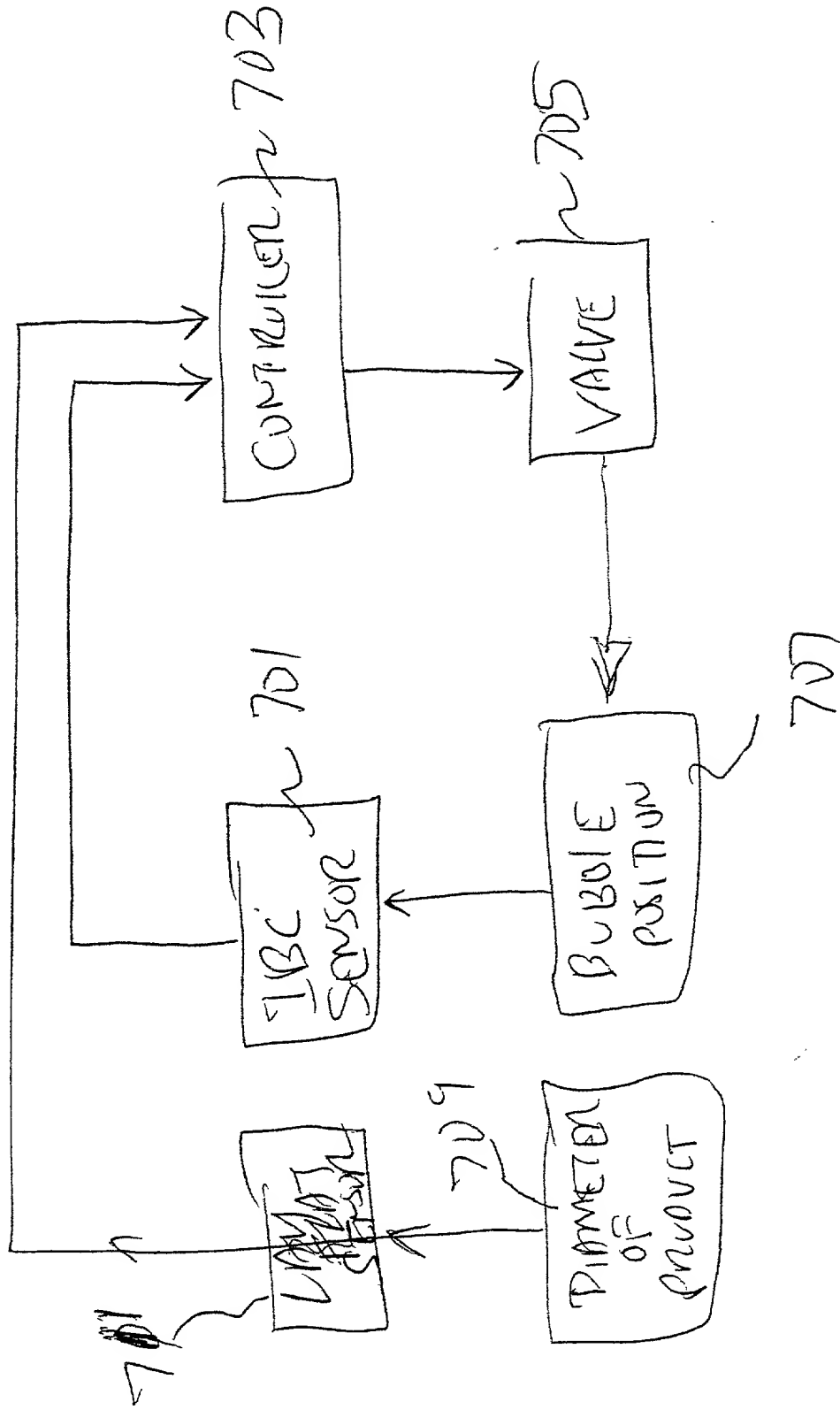


FIGURE 39

FIGURE 40

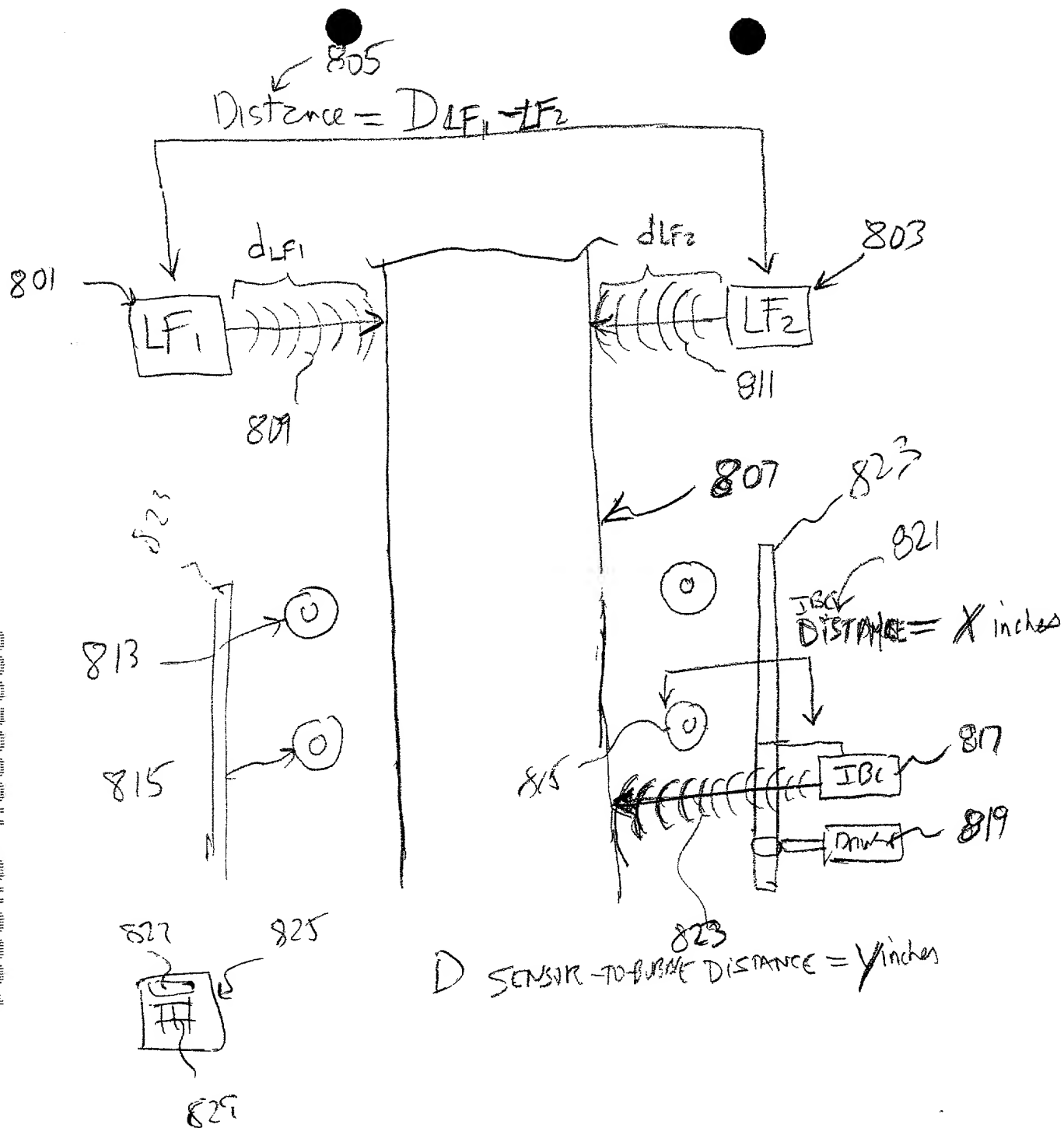


FIGURE 40

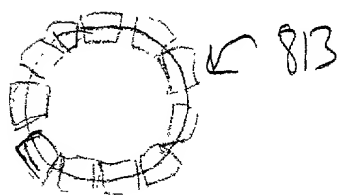


FIGURE 41

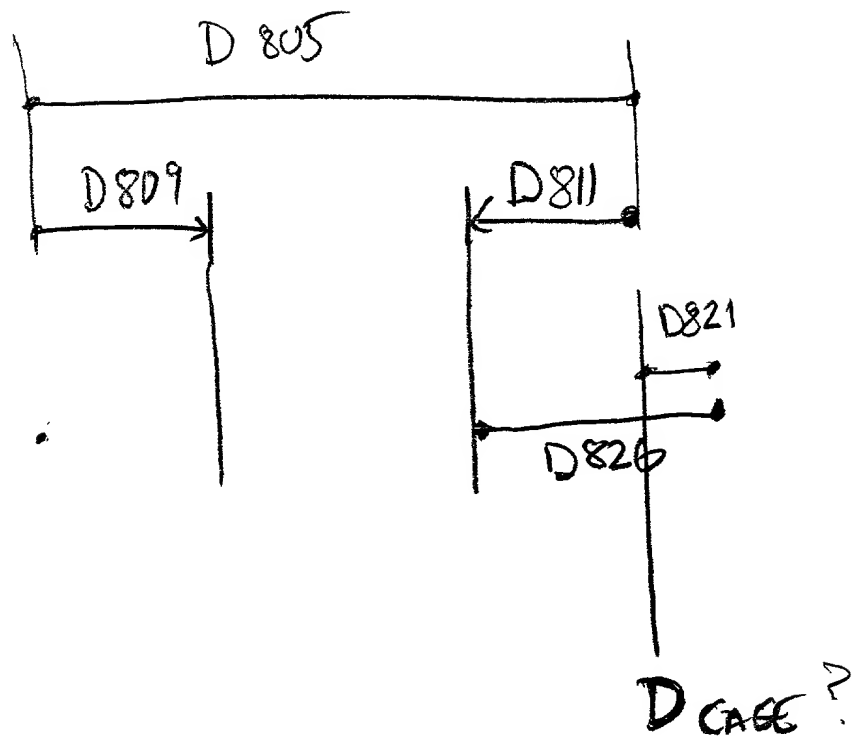


FIG 423

$$D_{CAGE} = (D805 - D809 - D811) + (D826 - D821)$$

WORKING MODE

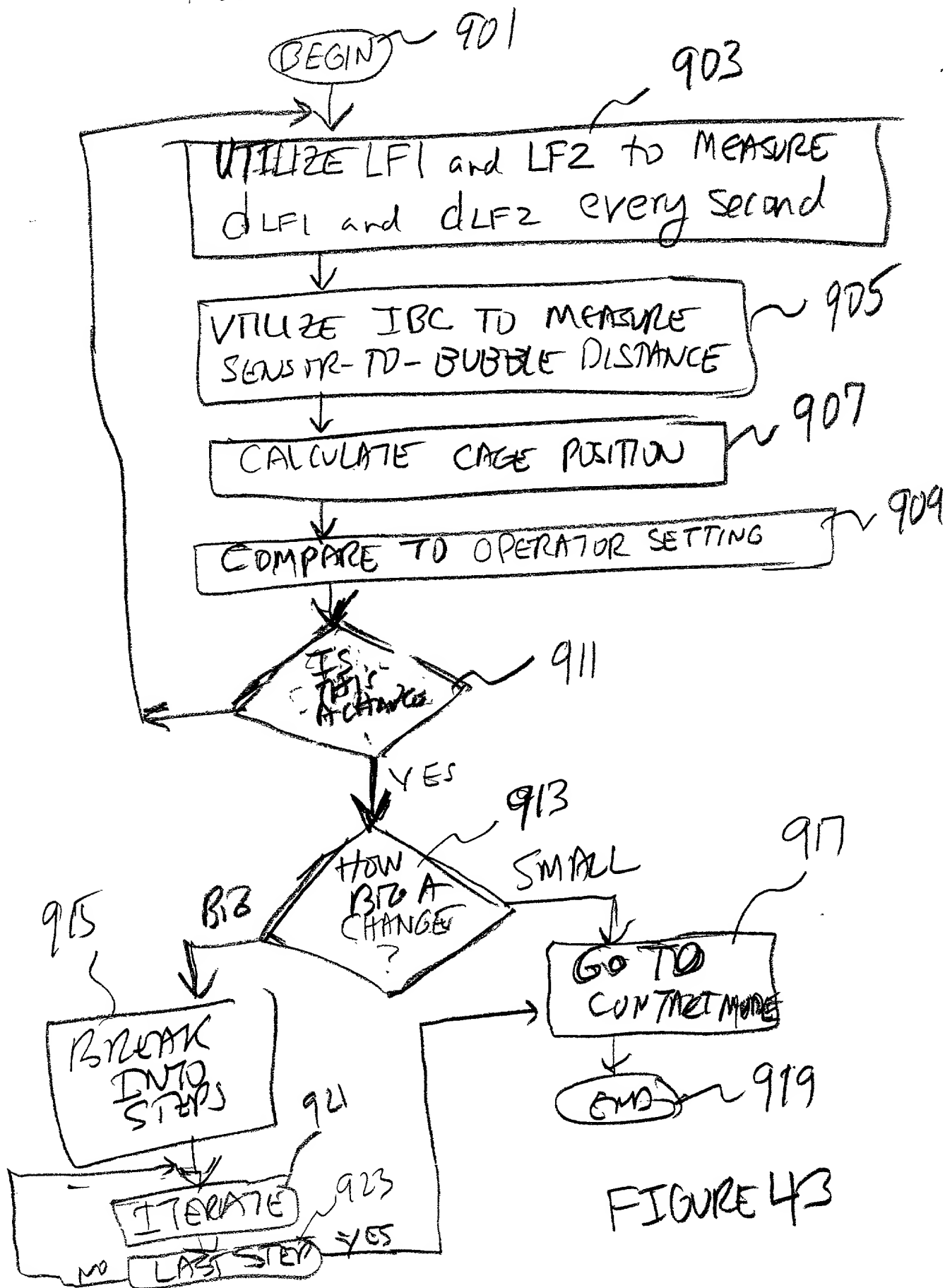


FIGURE 43

This Routine Runs  
only when Echo loss occurs

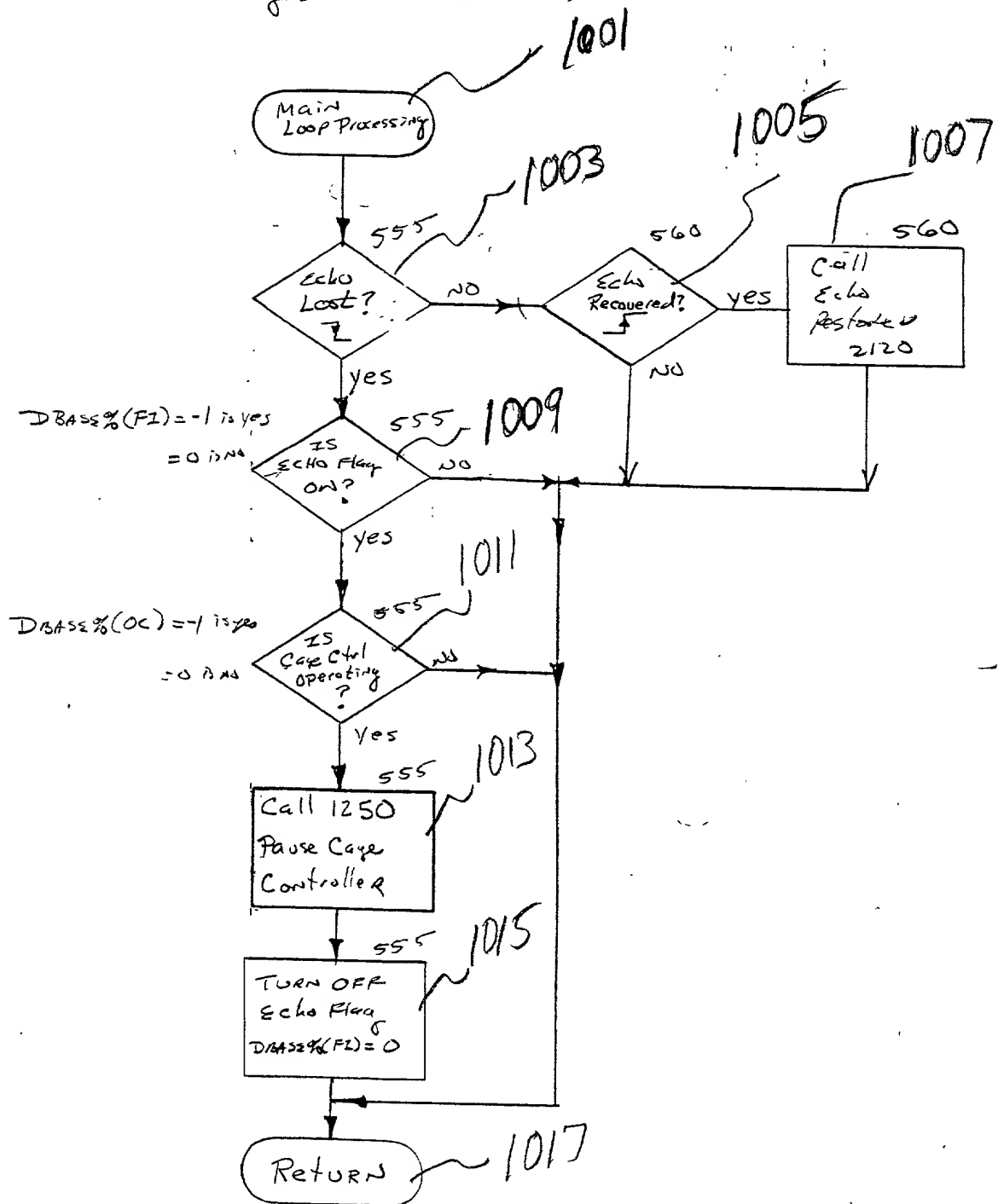


FIGURE 44A

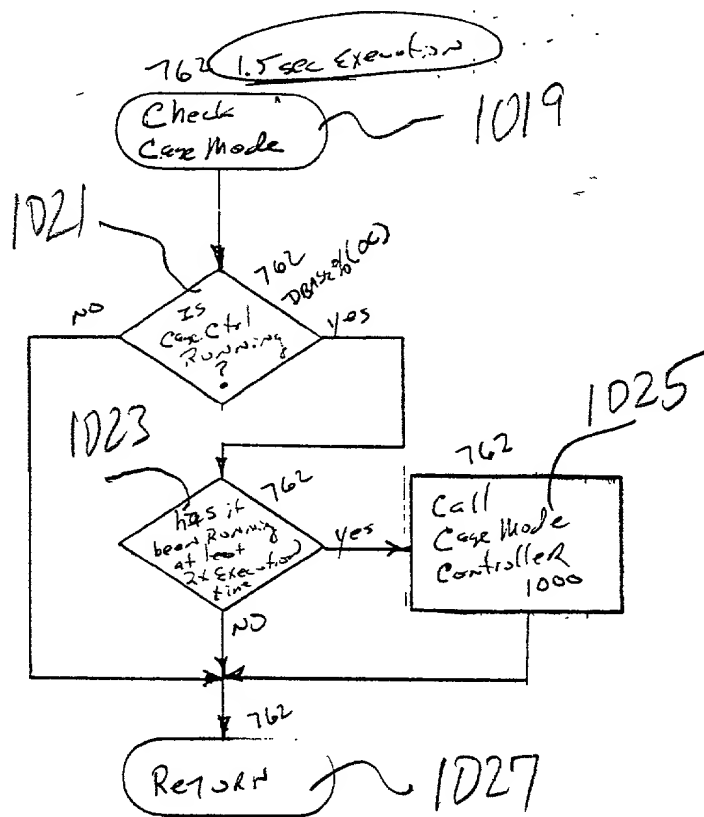
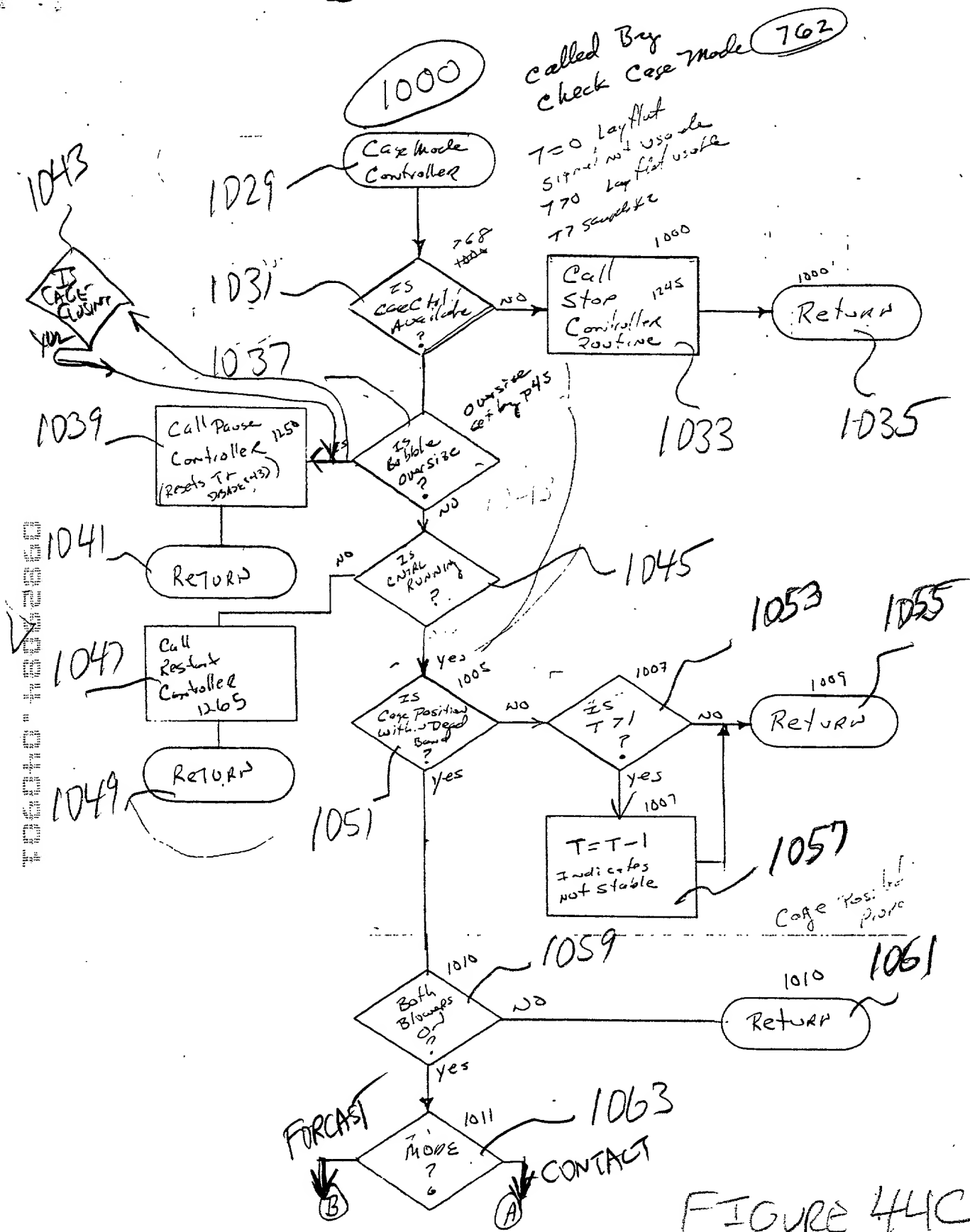


FIGURE 44B





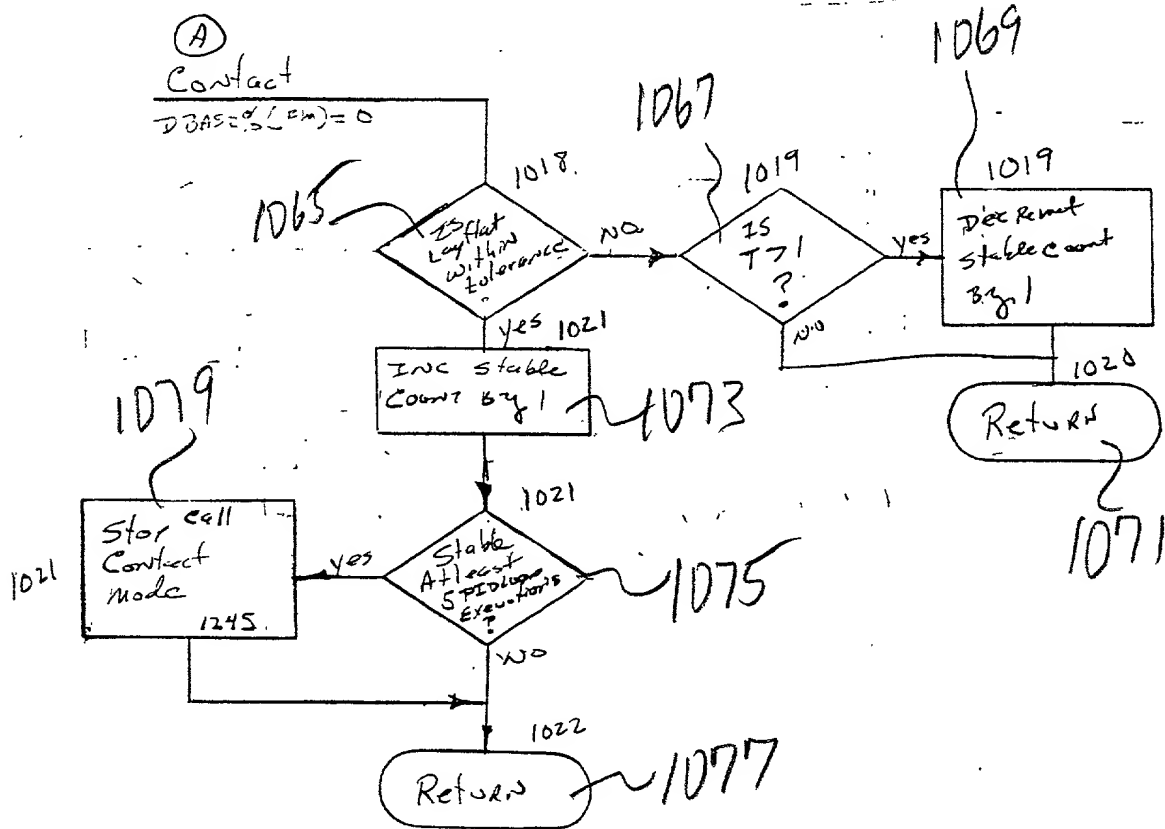


FIGURE 44 D  
 CONTACT MODE

1081 1083 1084 1085 1087 1089 1091 1093 1095 1097 1099

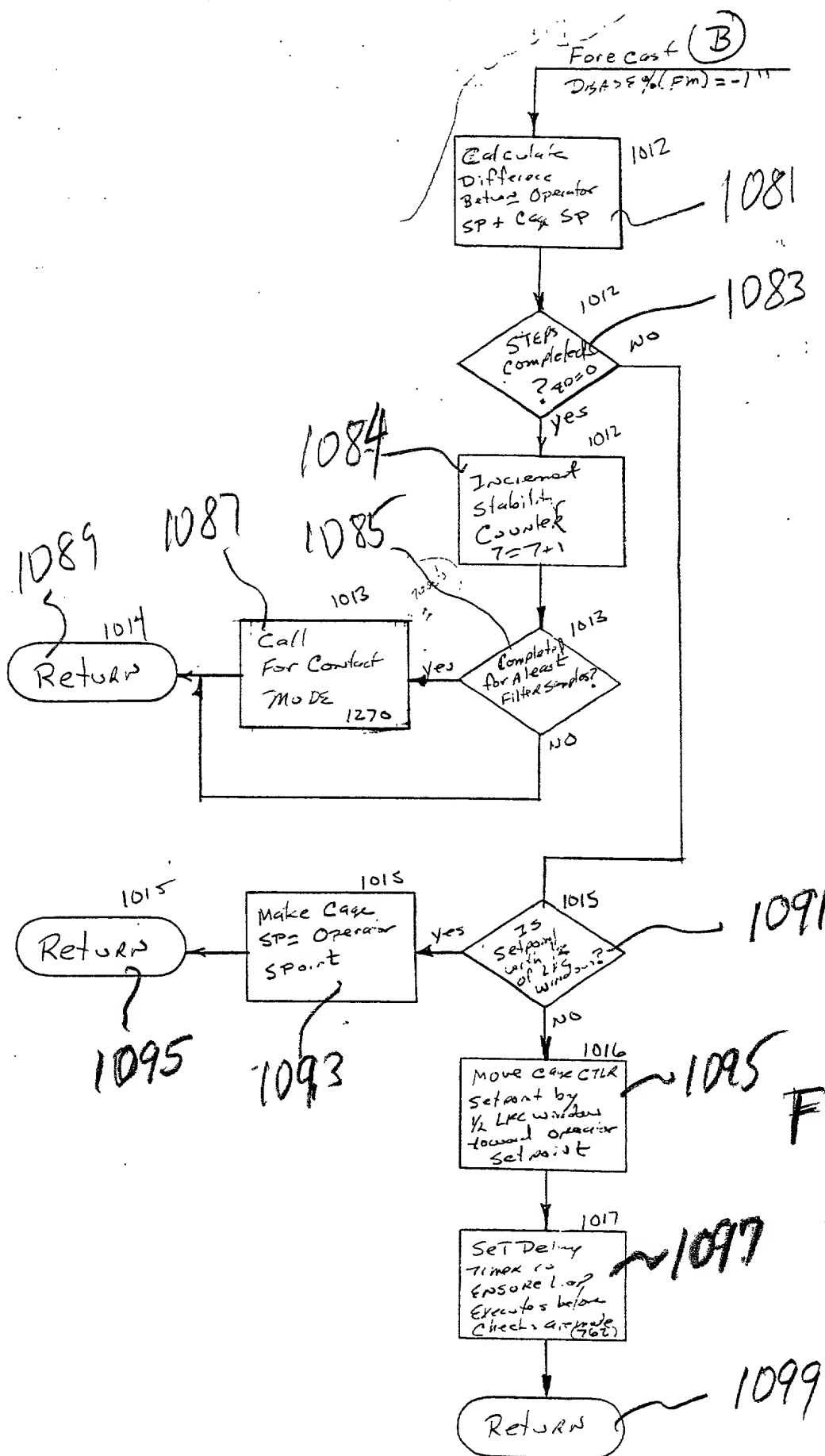


FIGURE  
44E  
FORECAST  
MODE

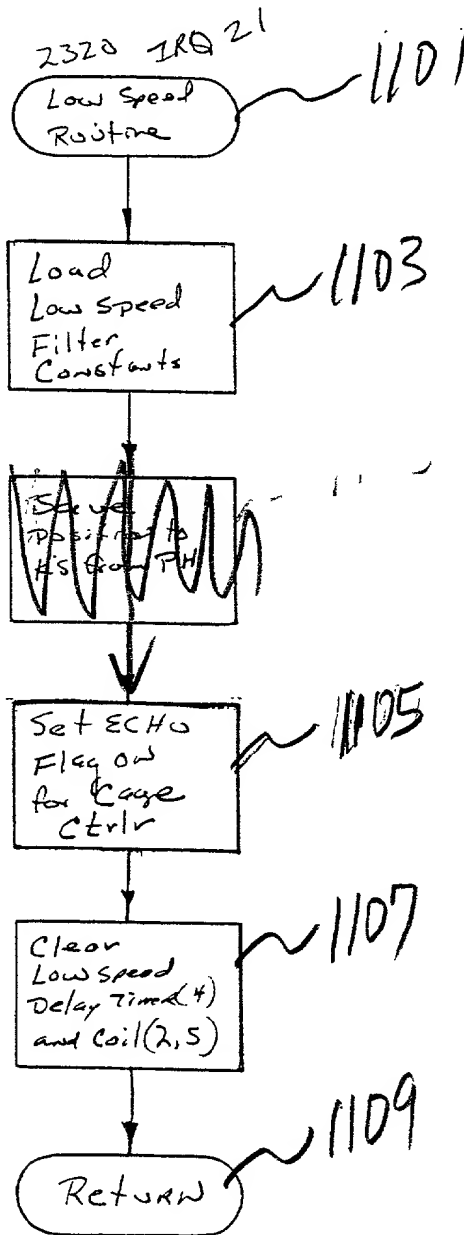


FIGURE 44 F

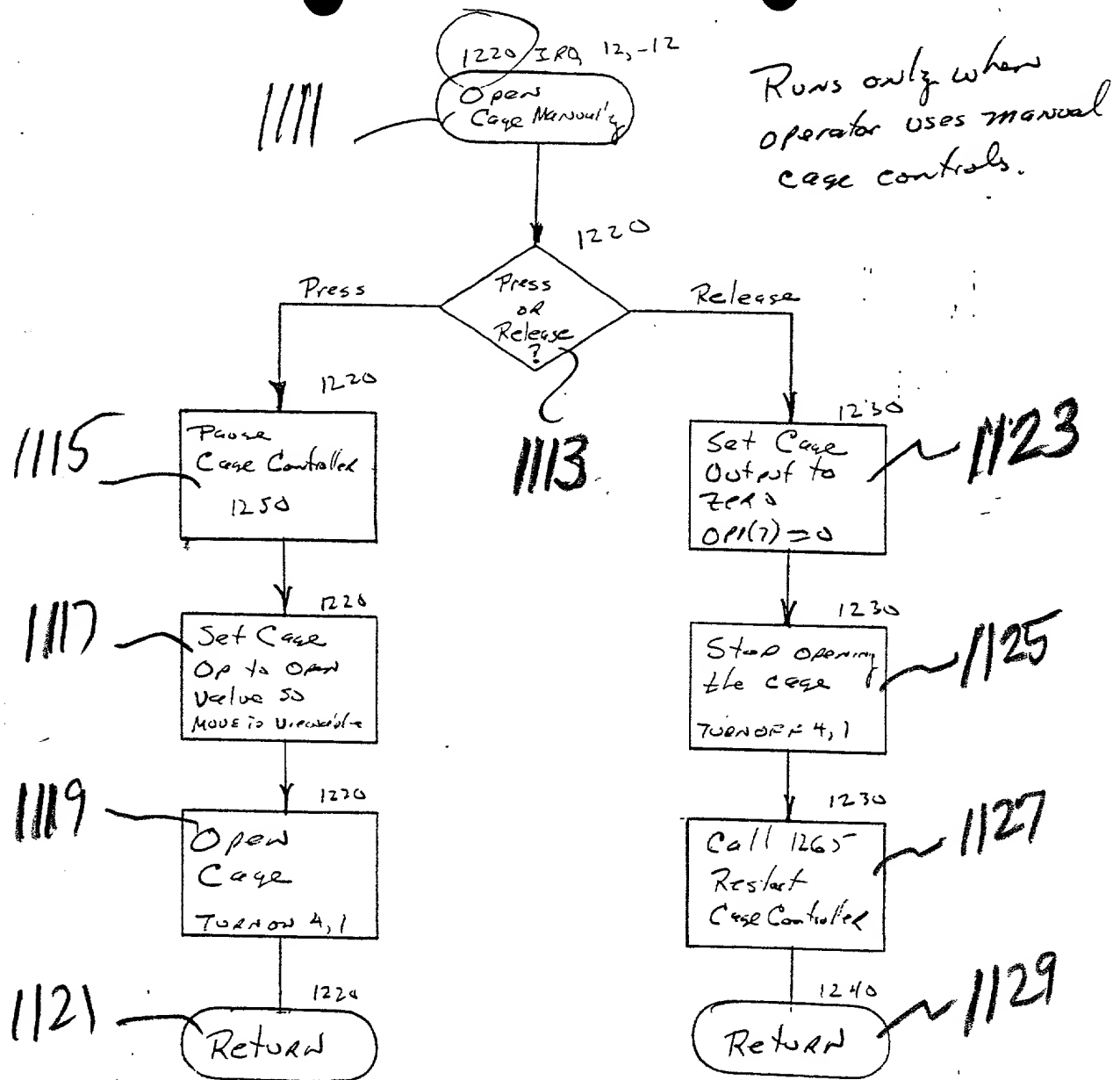
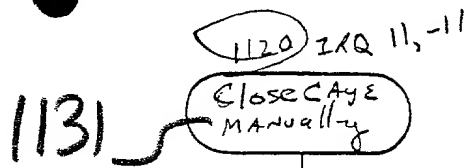


FIGURE 44G



Runs only when operator uses manual cage controls

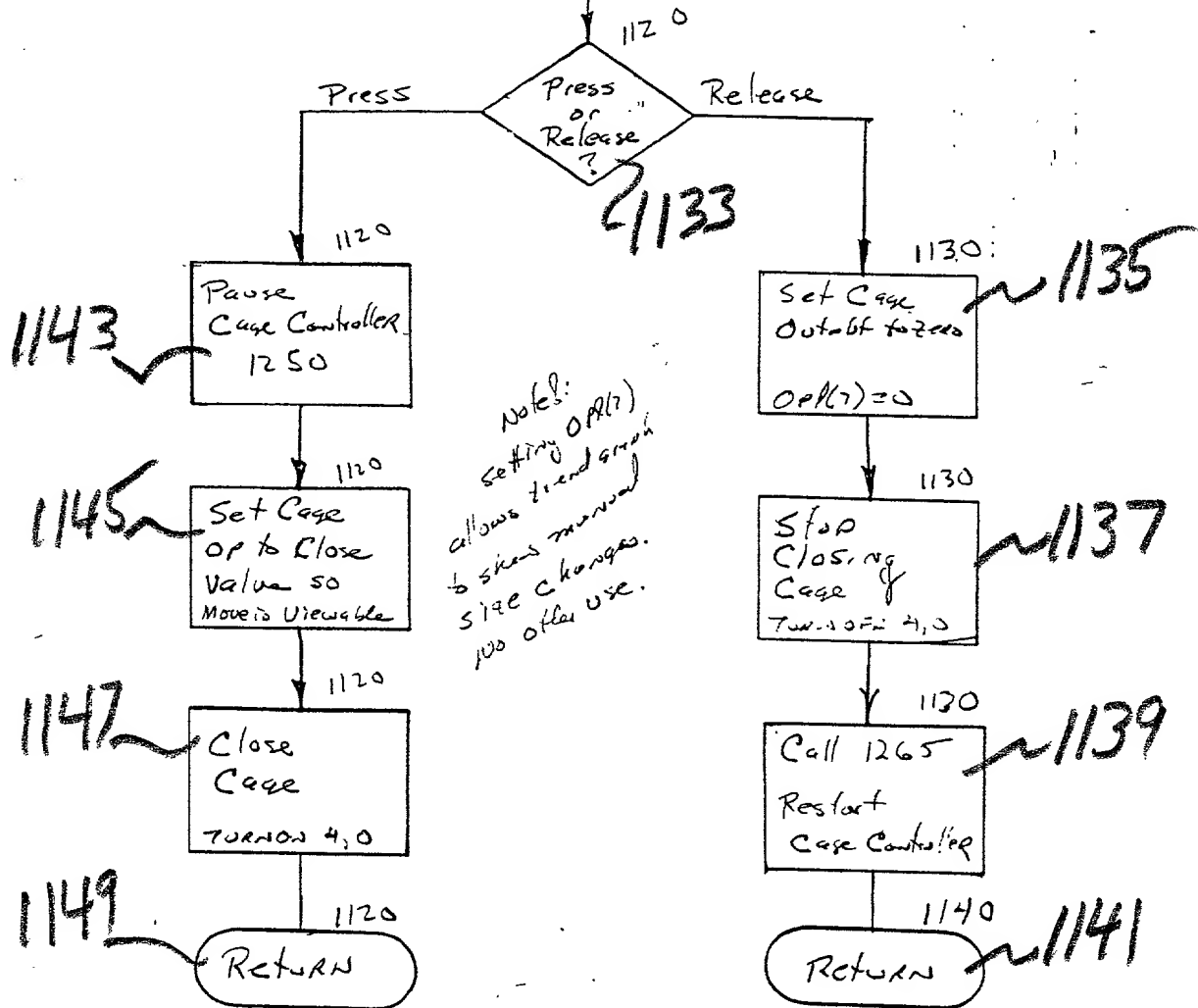


FIGURE 44 H

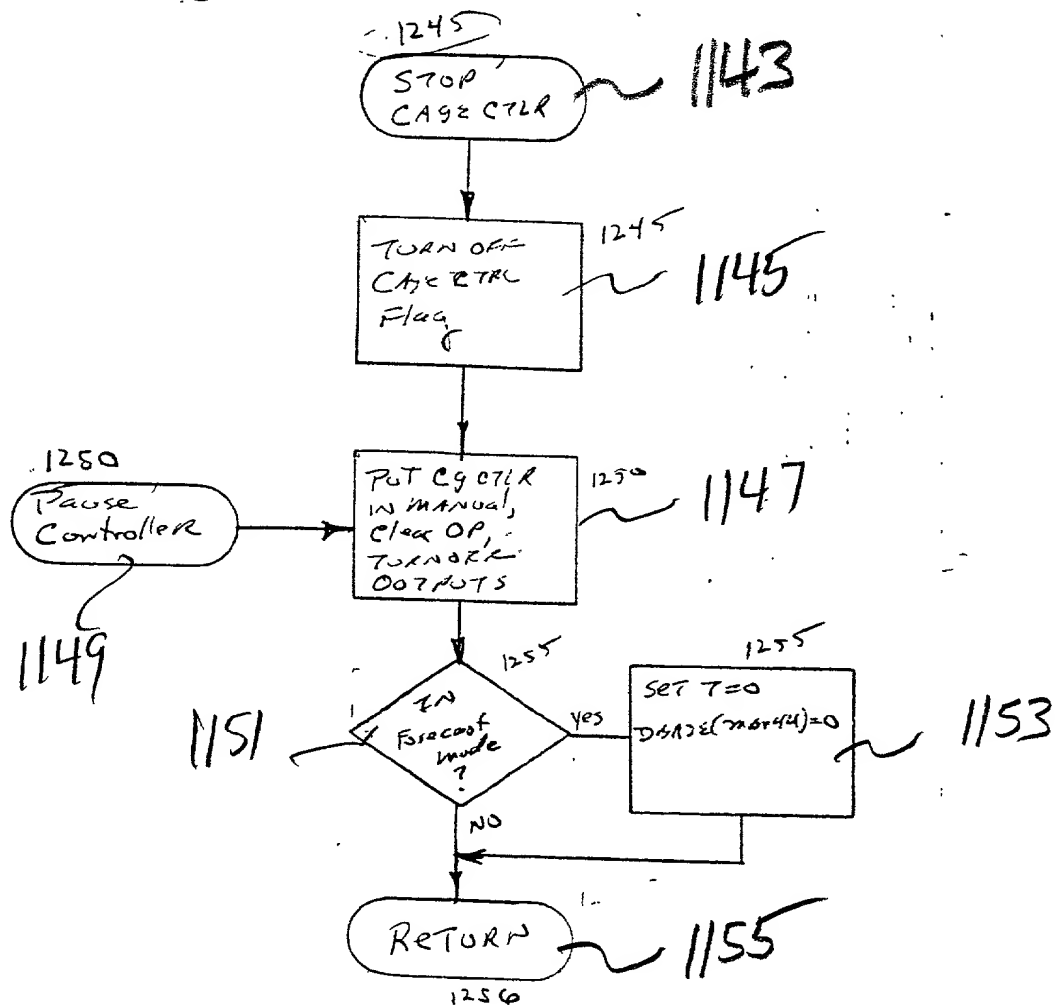


FIGURE 44 I

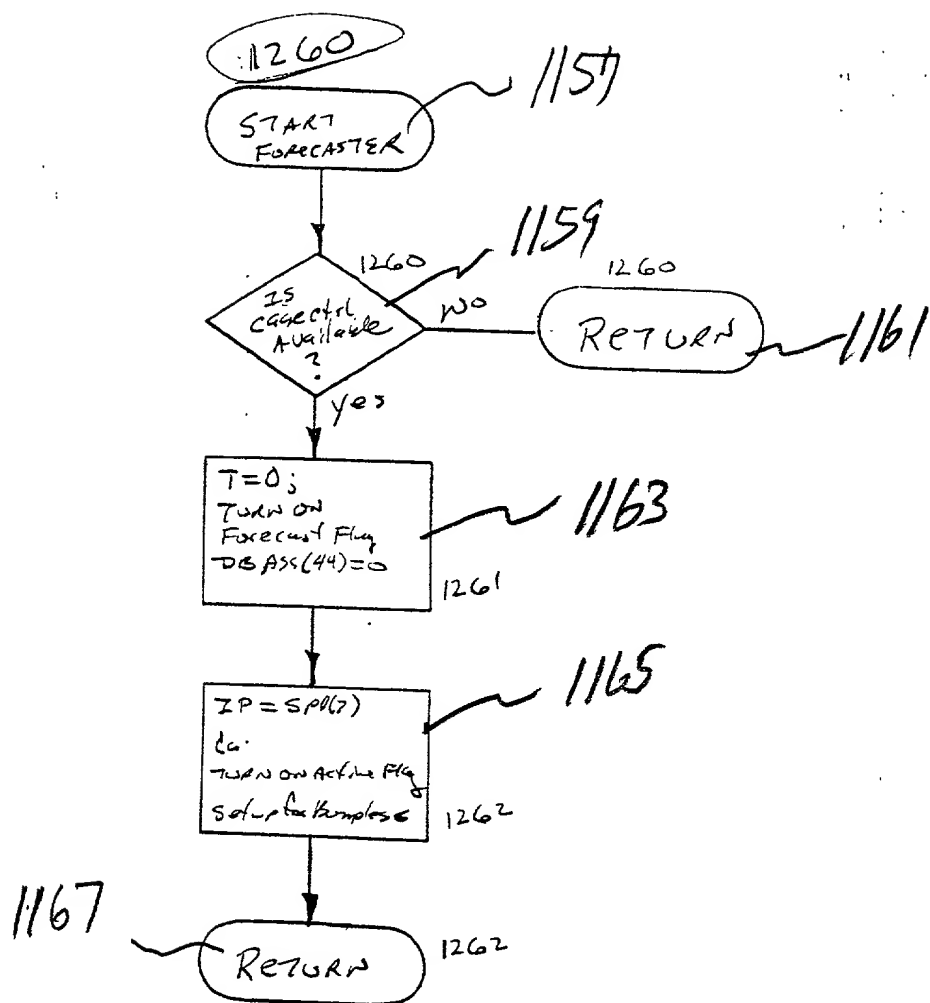


FIGURE 44J

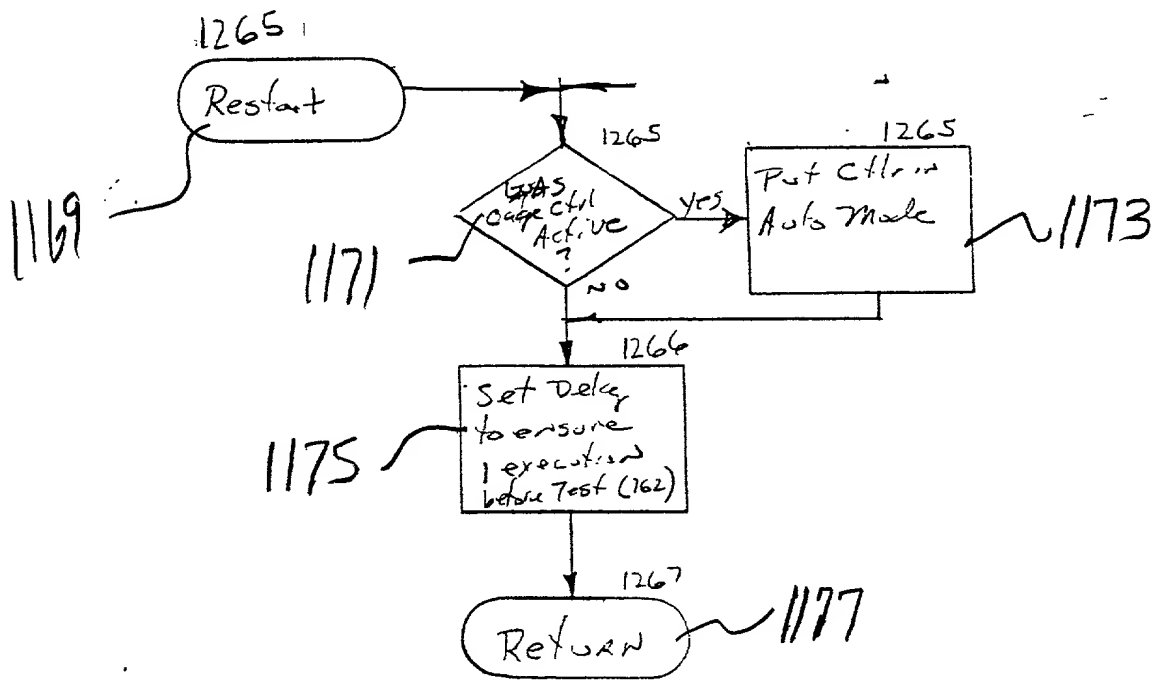


FIGURE 44K



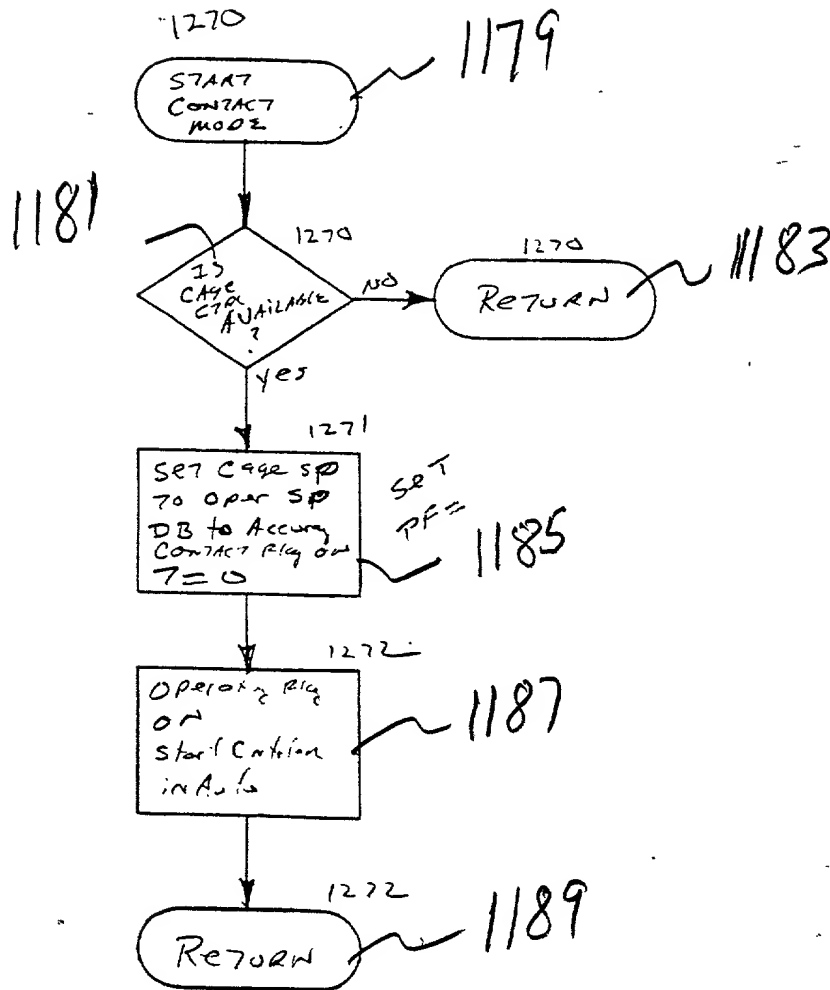


FIGURE 44L

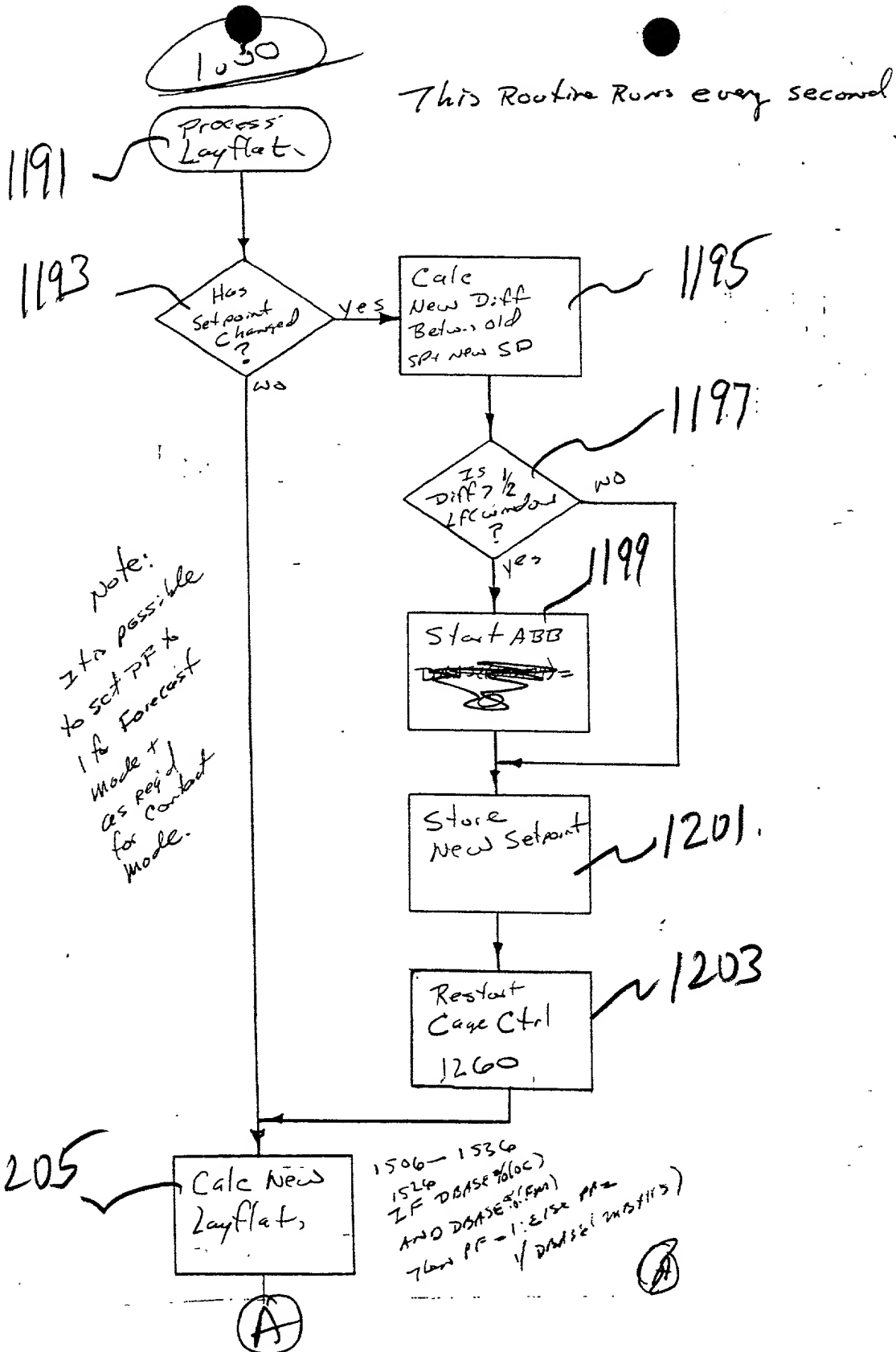


FIGURE 44 M

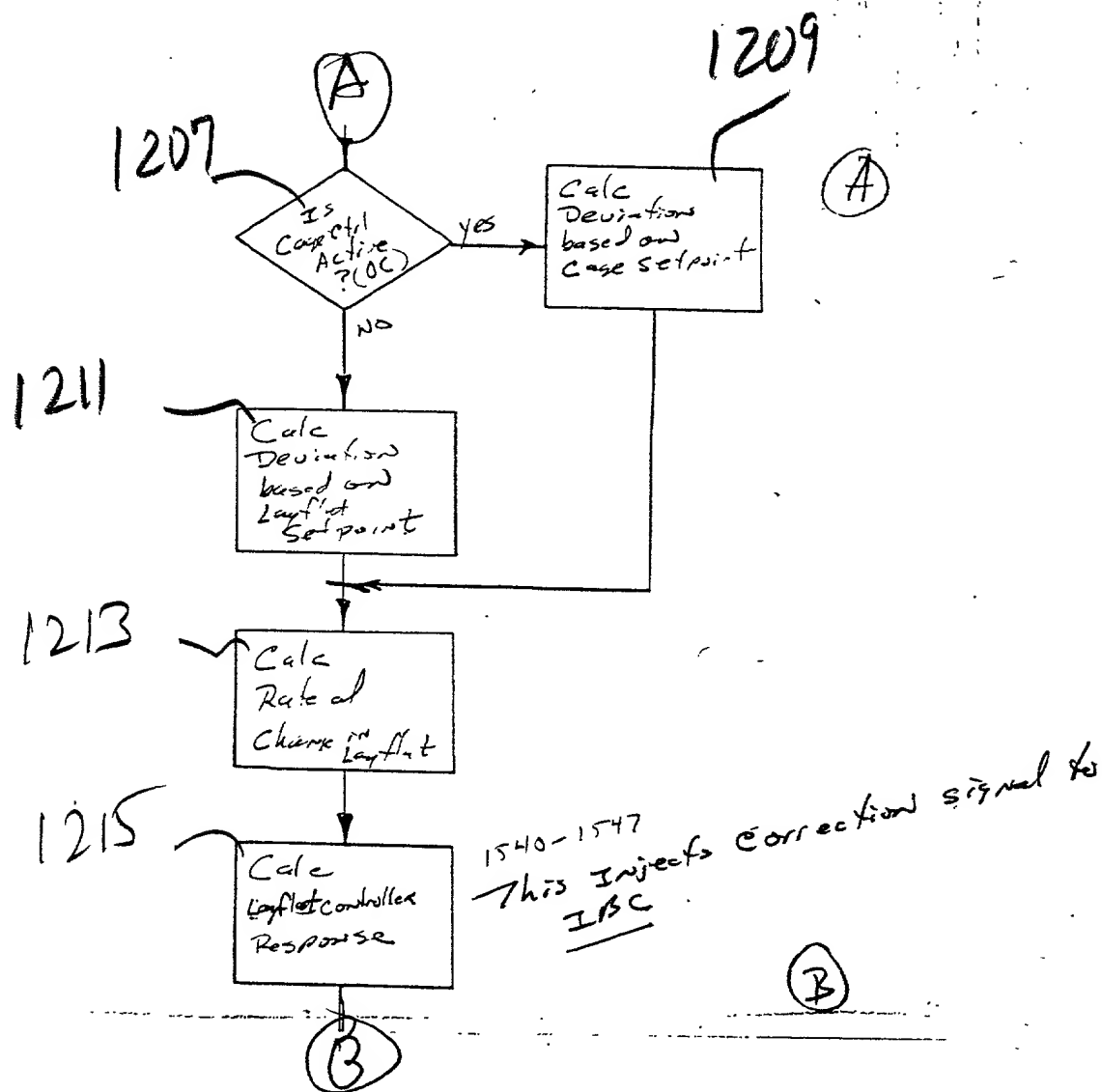


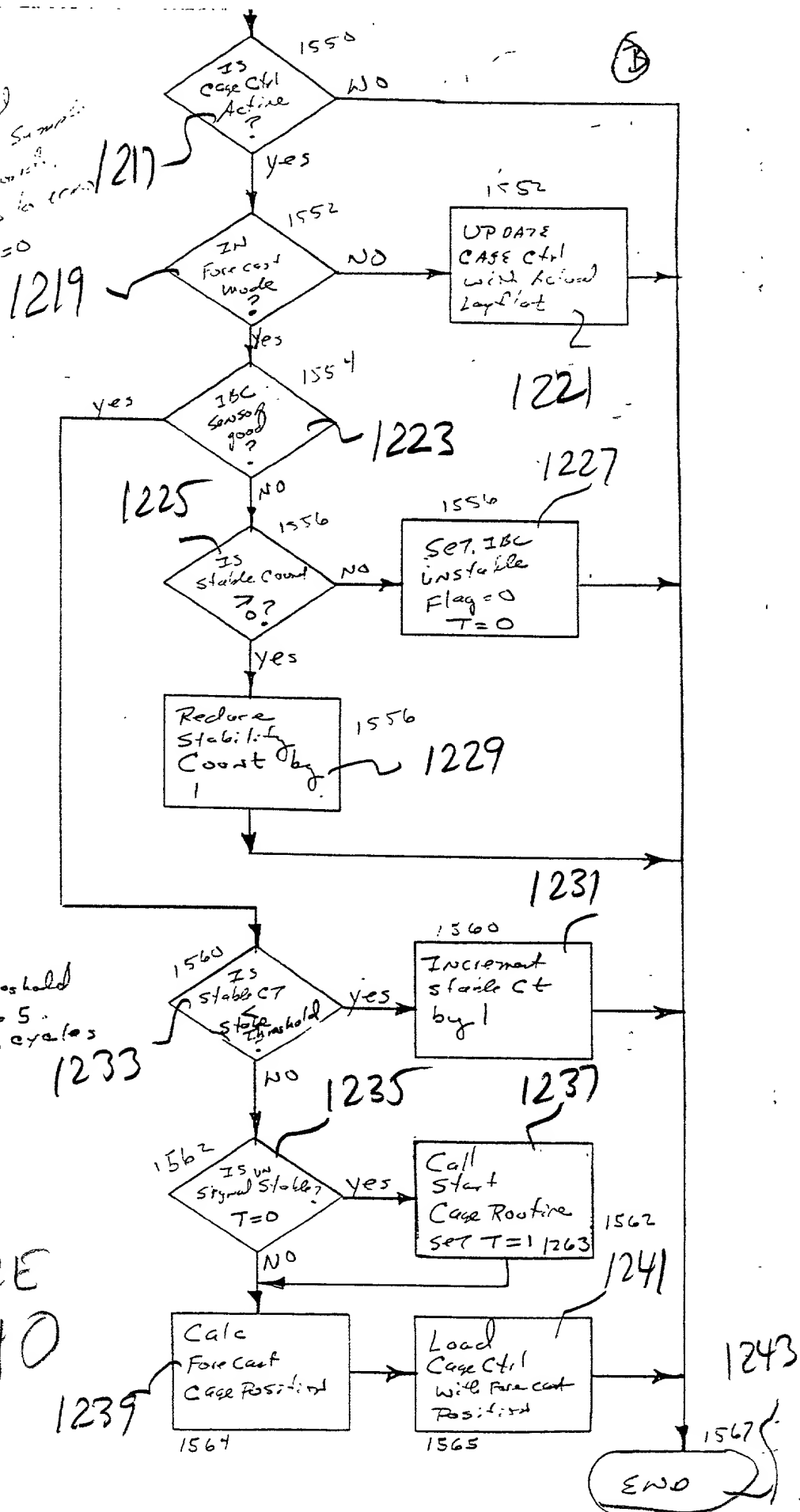
FIGURE 44N

1219 1221 1223 1225 1227 1229 1231 1233 1235 1237 1239 1241 1243

This Routine  
sets T=1  
if signal  
stable for sum  
count sensor.  
If it gets to count  
... sets T=0

Stable Threshold  
Typically = 5  
continuous cycles

FIGURE  
440



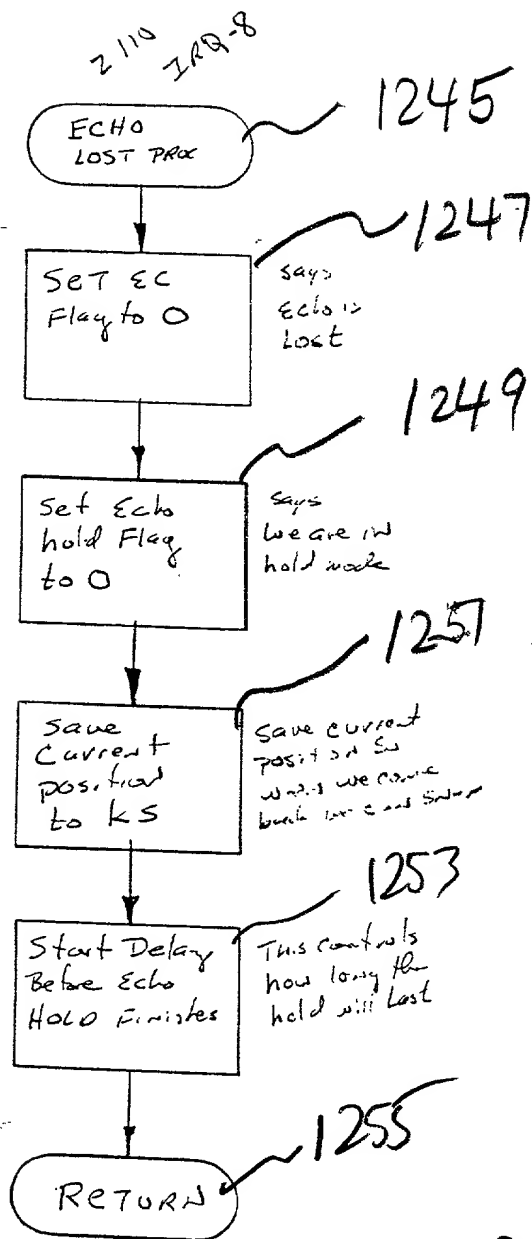


FIGURE 44 P

FIGURE 44Q

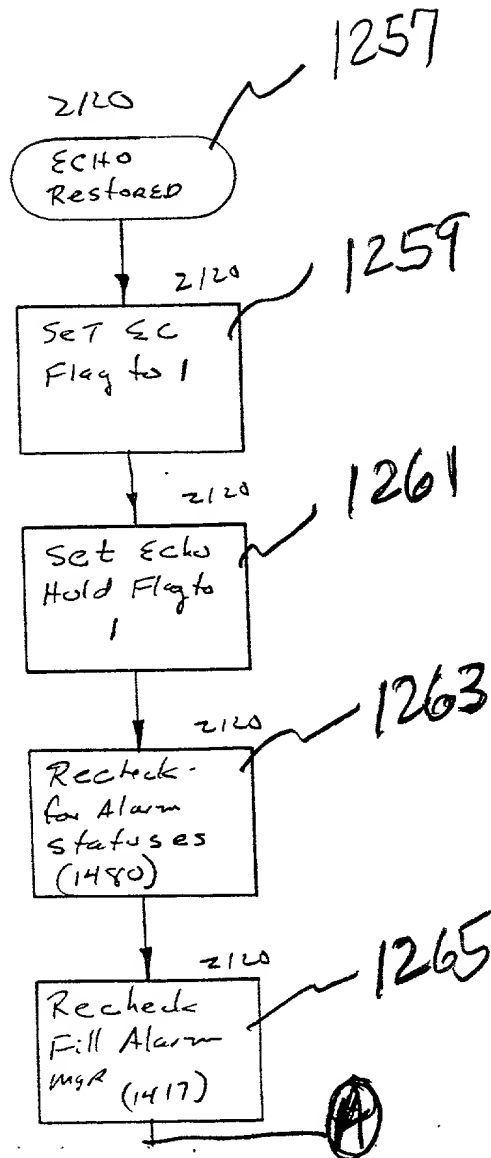


FIGURE 44Q

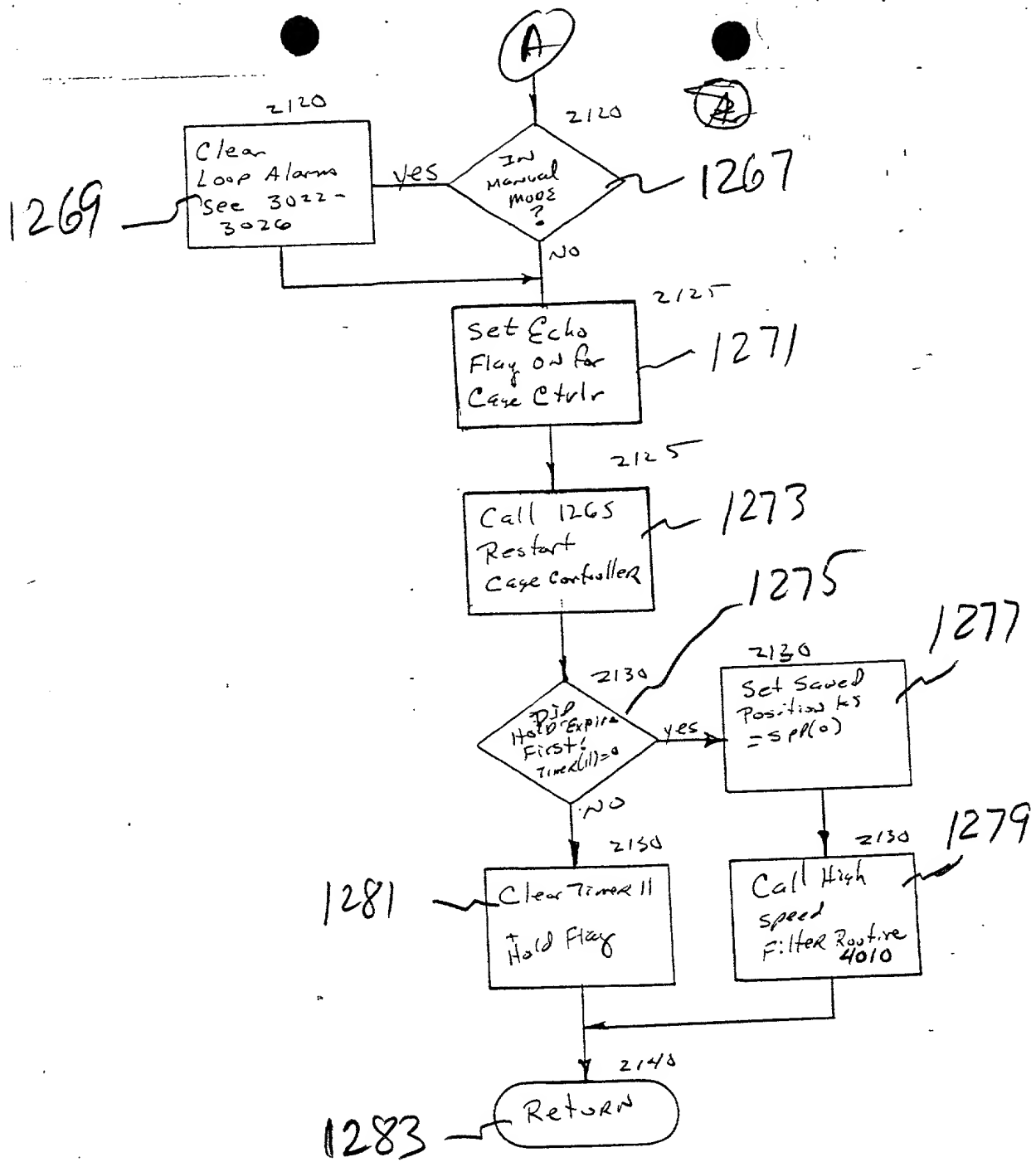


FIGURE 44R

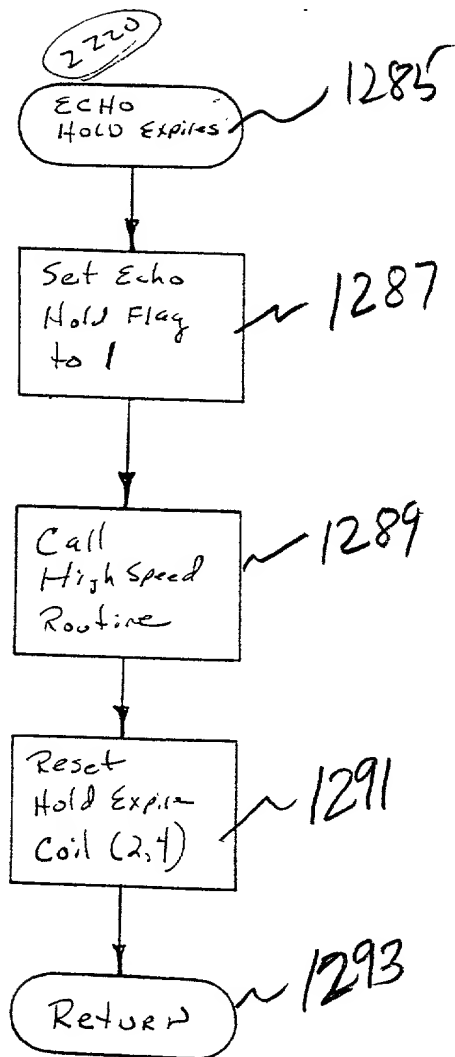


FIGURE 445



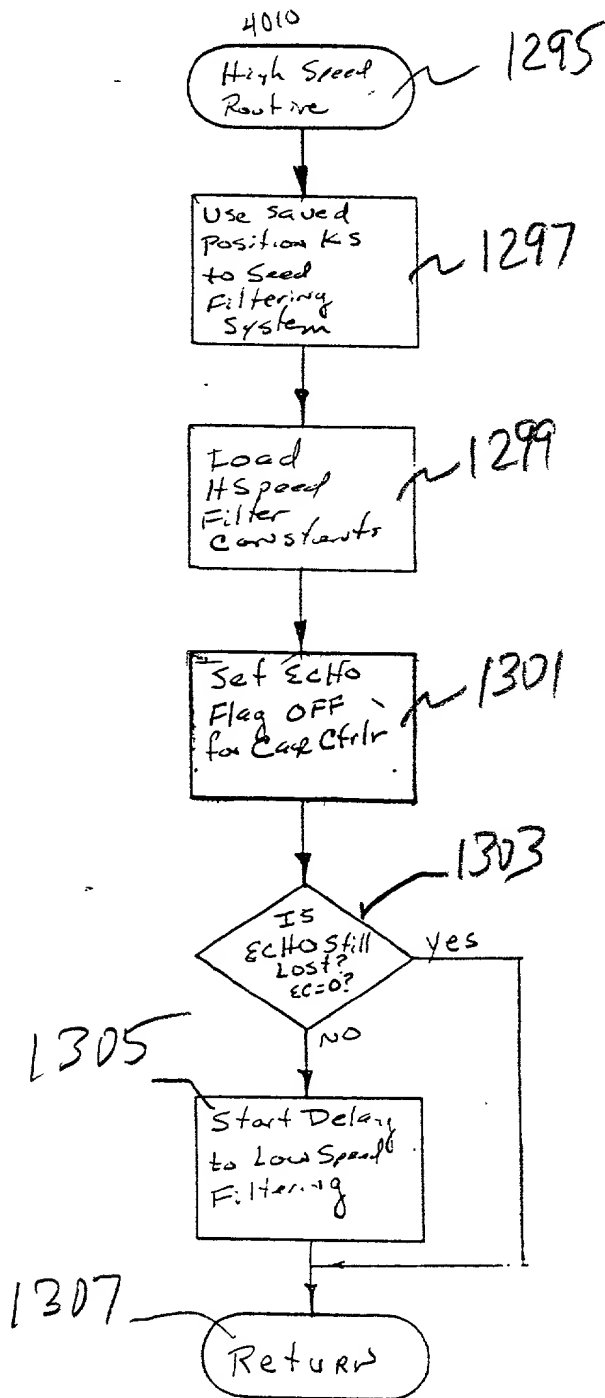


FIGURE 44 T

**CAGE CONTROLLER MONITOR** 163

ProcVal... 12345

In Bias... -1234

DeadBand.. 1234

SetPt..... 12345

Error..... -1234

Gain..... 1.12

ZeroSci... -1234

OutPut.... -1234

FullSci... 1234

Mode..... MAN

Update.... 123

ECHO Running Contact

163

123.12

ACTUAL 123.12

CAGE 123.12

GOTO PARAM

GOTO BACK

FIGURE 45

A high-contrast, black and white photograph showing a close-up of a mechanical component, likely a tire or wheel assembly. A white arrow points to a specific area on the upper edge of the component, indicating a point of interest or damage. The image is grainy and has a high level of contrast, with the left side being very bright and the right side being very dark. The component appears to have a textured surface, possibly a tire tread or a metal rim. The arrow is white and points downwards and to the right, towards the edge of the component. The overall image has a grainy, high-contrast quality, typical of a photocopy or a low-quality scan.

FIGURE 46

CAGE CONTROLLER PARAMETERS

166 ACCEPT

READY

40 MIN P 1.12	45 OVRLM 1.12	48 CGSIZE 123.12
41 UPDAT 12.1	46 CONCT 1.12	
42 ERROR 1.12	47 MAX P 1.1	

CAGE CONTROLLER PARAMETERS: To get help on a parameter, press HELP and enter the number. Press ACCEPT to load new values.

HELP 12

GOTO BACK

FIGURE 47

**CAGE CONTROLLER MONITOR** 155

Position... 15.00  
 In... 0  
 Readback... 25  
 Gain... 1000  
 Error... 22  
 Gain... 0.05  
 ZeroAdj... 0  
 Output... 2  
 Full Scale... 70  
 Mode... MAN  
 Update... 150

[NO-HO] [Finished] [Control]

[TARGET] [ACTUAL] [CAGE] [PARAM] [BACK]

75.00 74.83 74.79

5

The screenshot displays the CAGE CONTROLLER MONITOR interface. At the top, the title "CAGE CONTROLLER MONITOR" is shown with a version number "1.05" in the upper right corner. Below the title, a list of parameters is displayed on the left side, including "Prognosis", "In", "DeadBand", "SelfP...", "Error...", "Gain...", "ZeroSol...", "Output...", "FullSol...", "Mode...", and "Update...". To the right of these parameters, a large rectangular area contains a waveform plot. Below the plot, there are four buttons labeled "TARGET", "ACTUAL", "CAGE", and "PARAM". The "TARGET" button shows the value "57.00", and the "ACTUAL" button shows the value "56.85". The "CAGE" button shows the value "56.85". The "PARAM" button is labeled "PARAM" and the "BACK" button is labeled "BACK".

Parameter	Value
Prognosis	5688
In	0
DeadBand	25
SelfP...	5700
Error...	21
Gain...	5.06
ZeroSol...	-2
Output...	0
FullSol...	8
Mode...	Man
Update...	150

Target	Actual	Cage	Param	Back
57.00	56.85	56.85	PARAM	BACK

FIGURE 49

CAGE CONTROLLER UNIT

Target 75.00

Actual 66.98

Cage 64.89

Param 75.00

Back

FIGURE 50

106010" 13062660

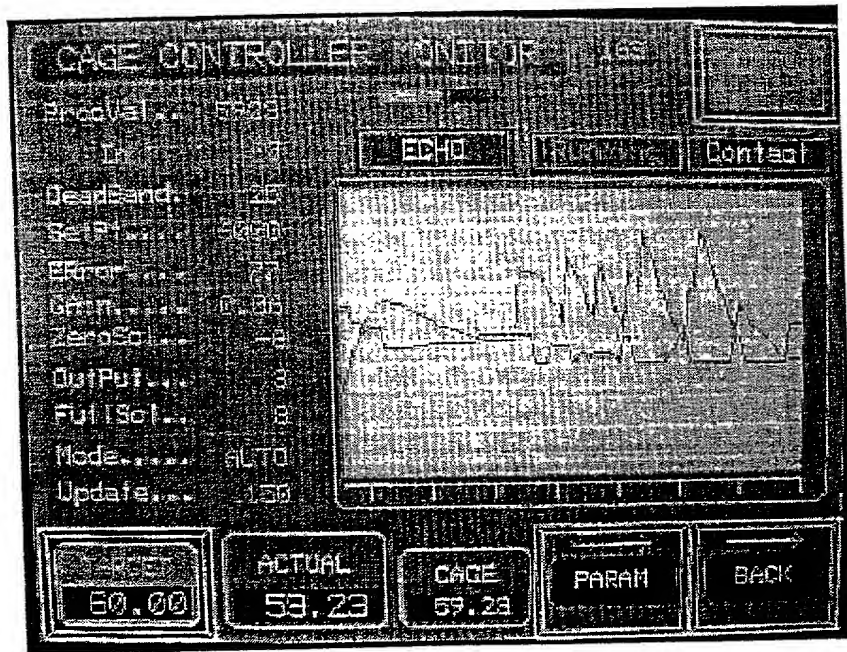


FIGURE 51



706040 706336

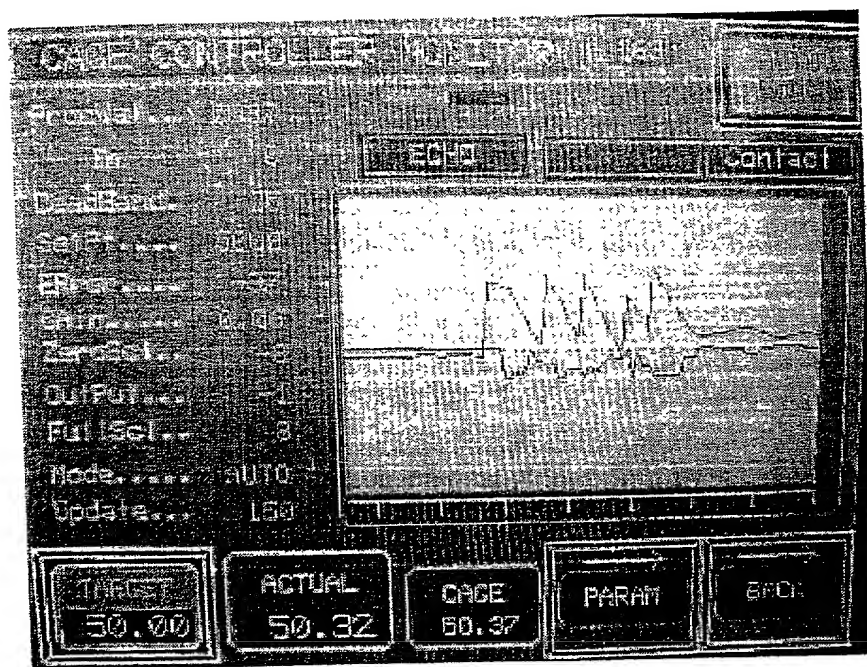


FIGURE 52

T06010 13052800

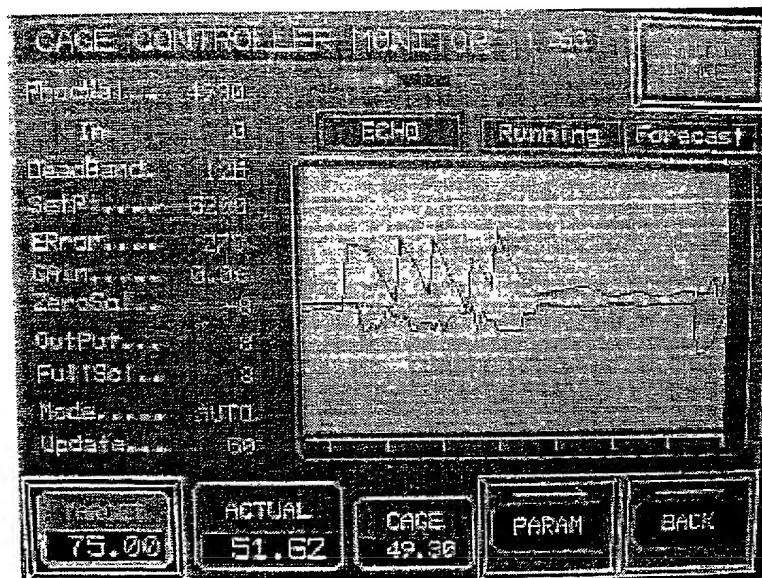


FIGURE 53